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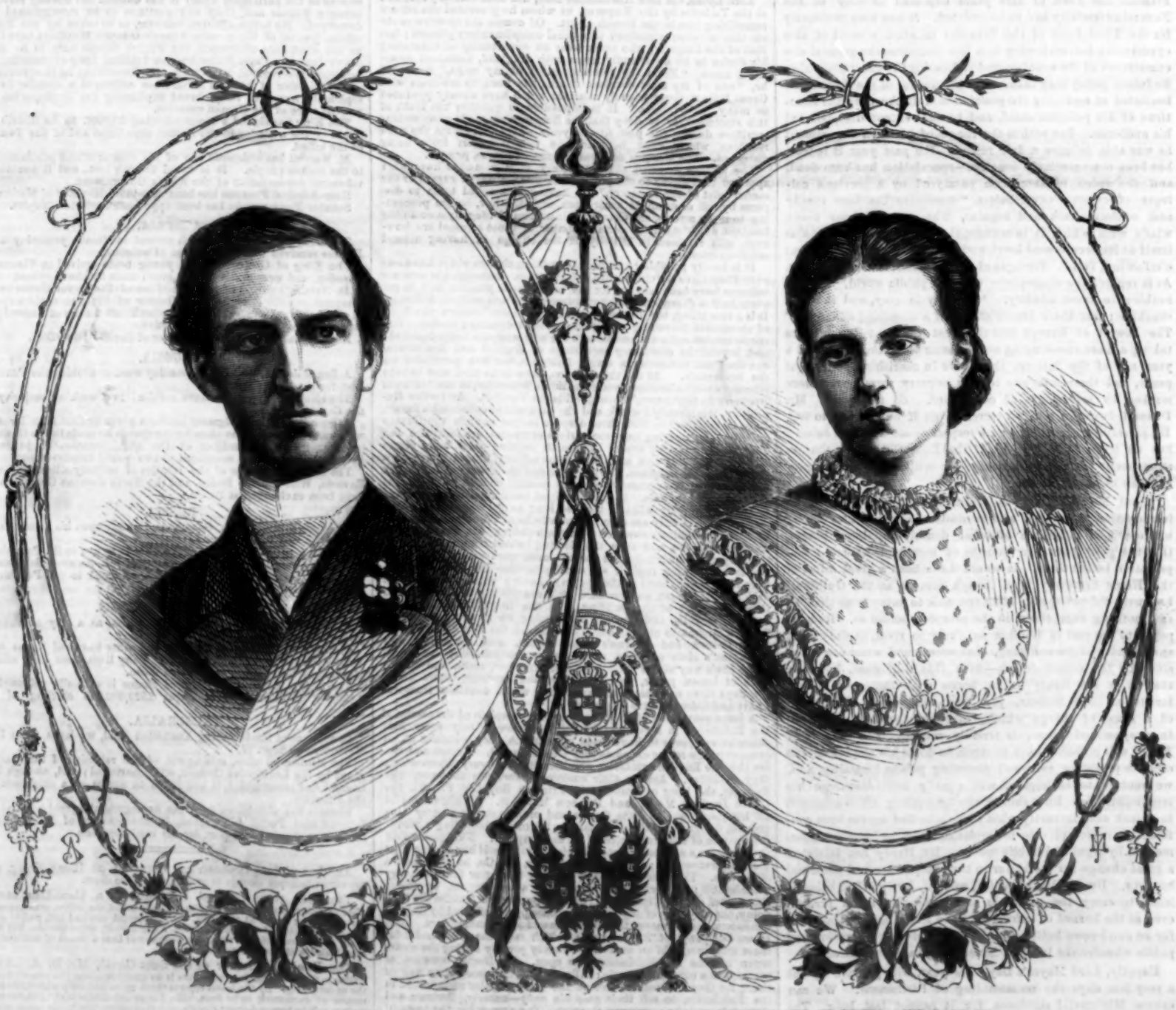
LORD MAYOR'S DAY.

WHETHER or not the disappearance of the Lord Mayor's state coach from the civic pageant of the ninth of November, and the curtailment of the procession from the Guildhall to Westminster of its customary proportions, should be regarded as omens of a coming change in the position of the City Corporation, we leave to such as are shrewd in interpreting the signs of the times to determine. The unusually long and solemnly admonitory speech of the Chief Baron of the Court of Exchequer, on the claim being made, on behalf of the Lord Mayor, commonalty, and citizens of London, to the rights, privileges, and immunities that of old have belonged to them, appeared to foreshadow a possibility that this ancient and historic body is in danger of being touched by the ruthless hand of Reform. The absence of the men in armour, and of the watermen bearing the banners of the various City guilds, and more especially the disuse of the old, lumbering, tawdrily-bedizened vehicle which has been wont to symbolise the majesty of London's chief magistrate, may have suggested the topic upon which the Chief Baron descanted with so much poetry and pathos. Unquestionably, that numerous and important body, "the roughs," disapproved of the innovation as highly discouraging to their branch of business. Nevertheless, we do not believe that this particular change of custom is the forerunner of any serious loss of power or dignity to the oldest municipality in the realm, any more than the laying aside of an old-fashioned suit of clothes for a newer and more becoming one necessarily forebodes a man's approaching dissolution. One conclusion, we think, may be taken for granted—that no sphere of public usefulness in this country, which is well filled, is exposed to any present danger of being "improved off the face of the earth."

Neither "the Lord Mayor's Show nor the Lord Mayor's



GEORGE I., KING OF GREECE, AND HIS QUEEN, THE GRAND DUCHESS OLGA CONSTANTINOVNA OF RUSSIA.—SEE PAGE 536.

Feast" has ordinarily presented itself to us as an instructive or even an attractive subject for comment. This year the case is somewhat altered. The old routine has been disturbed, although but slightly, and public attention, excited by the change, will be very apt to contrast with the fairly ordered state of the City the vastly more extensive and populous districts of the metropolis that have been left hitherto without municipal organisation. There cannot, surely, be any ground in reason for anticipating that the City Corporation will lose aught of her dignity when she shall become surrounded by a circle of sister municipalities. She will not be worse governed because they are better governed. She has many things in her favour—age, prescription, historic prestige, property. The position of *primus inter pares* is, after all, a higher position than that of isolated greatness, enriched by a dead level of inutility, as a mountain which overtops a whole range is more majestic than one which rises singly from the plain. All rights, and especially all privileges, are in relation to the ends that they obtain; and, of course, the nobler the ends to be secured the more valued are the means by which they are secured. The good government of the whole metropolis is more important than the good government of but a small part of it, and whatever conduces to the former will enhance rather than depreciate the respect due to the latter. External customs may change their form—exclusive rights may undergo modification; but nothing which contributes to the order and comfort of from two to three millions of people can permanently lower the standing of that corporate body which will necessarily constitute the centre of the system by which so desirable an object is achieved. They are but unwise friends of the City Corporation that would insinuate that the creation of similar bodies for the rest of London would be incompatible with the maintenance of its splendid hospitalities, and that myriads of myriads of people must remain in a condition of inorganic confusion in order that statesmen and monarchs may continue to be feasted at Guildhall. The two things are not necessarily in antagonism, and to make them so is but to expose the lesser of the two to unmerited reproach.

The absence of Lord Derby from the annual City banquet occasioned lively regret, not only because physical indisposition was the cause of it, but because the rôle which the Premier has been of late years expected to play at the November festivity had to be omitted. It has been customary for the First Lord of the Treasury to avail himself of this opportunity for reviewing in a few sentences the general circumstances of the country, and indicating the direction which its future policy may take. The Chancellor of the Exchequer hesitated at assuming the position and discharging the functions of his political chief, and to that extent disappointed his audience. But within the range of his own department he was able to give a fair report. The past year, it is true, has been comparatively inactive—speculation has been dead, and the spirit of enterprise paralysed by a previous collapse of credit; nevertheless, "commerce has been steady and uniform—rich and regular, like one of those trade winds with which it is connected;" the revenue maintains itself at its accustomed level, and the Exchequer is, "without o'erflowing, full." Presages of improvement are not wanting. As it regards the atmosphere of "the public world," there is nothing to cause anxiety. "The sky is grey, and it wants sunshine; but there are no clouds of a menacing character." The Powers of Europe and the great American Republic are taking a more encouraging and a juster view than they did a year ago of the interest they have in cherishing permanent peace, and their relations to this country were never more marked by sentiments of confidence. So far, good. Mr. Disraeli, however, told no secrets, even if he had any to tell. He preserved strict silence with respect to our domestic future; but we learn from the lips of the Lord Chancellor that an amendment of the bankruptcy law will figure in the programme of next Session.

"Lord Mayor's Day" is commonly looked upon as an introduction to winter, and reminds the inhabitants of the metropolis, if not those of other densely-populated places, that the poor have four months of increased hardship and privation before them. It would have been a great relief if the Home Secretary, who, though present at the Guildhall banquet, did not speak, had been able to inform us that he saw nothing exceptional in the prospect before us. Rumour points to the east of London as likely to rival, in the extent and severity of its suffering, that occasioned some few years since by the cotton dearth—with this difference, however, that it is not likely to be borne with the same manly fortitude. We forbear, just now, discussing the causes of a state of things which, although perhaps described in exaggerated terms, is terribly serious. The new Lord Mayor will probably have as much to do as his predecessor in office in presiding over and directing public liberality, and, we venture to anticipate, will equally well discharge his responsibilities. But, should the impending crisis approach in extent and intensity what those who live on the spot confidently predict, private benevolence must be largely supplemented by legal and public means. Mr. Hardy has initiated a great change for the better in the readjustment of parochial burdens. He will be compelled, we fear, for the time being at least, to carry the principle of equalisation much further, even at the hazard of infringing upon sound economical laws, for no one knows better than he that between starvation and public disorder the interval is very short and very direct.

Happily, Lord Mayor's Day, this year, will precede by but a very few days the reassembling of Parliament. We can excuse Ministerial reticence, for it cannot last long. The country will be anxiously curious to learn something besides the requirements of the Abyssinian war, and will, no doubt, elicit the information it needs. For our own part, we have no serious misgivings. Should necessity demand it, all political parties will recognise the gravity of the situation, and will unite in adapting to it the character and course of their legislation. In the presence of any stringent metropolitan exigency, speculative prejudices will forthwith disappear—for a common danger, should it become manifest, will, while it lasts, act more powerfully in obliterating party distinctions and jealousies than even a common festival. When Englishmen have to confront a great emergency they forget their divisions, and stand shoulder to shoulder for their country's good. Let us hope that what is threatening in our prospect may pass away, or, if that may not be, that it may be met with a public spirit worthy of the occasion.

FOREIGN AND COLONIAL INTELLIGENCE.

FRANCE.

(From our own Correspondent.)

PARIS, Thursday, Nov. 14.

Now that the Pontifical States are cleared of the invading bands of Garibaldians, and King Victor Emmanuel has withdrawn the Italian troops who had advanced across the Roman frontier, the *Moniteur* announces that the French occupation will cease "as soon as order is restored"—a somewhat indefinite phrase when taken in connection with the affairs of the Holy See. We are to have a conference, it seems, to settle the Roman question. One may be quite certain, therefore, that the occupation will last until the conference has arrived at some decision which the French Government feel inclined to accept. The defeat of the Garibaldians was not effected by the Pontifical zouaves without the assistance of the French troops, it seems, and mainly, too, by the aid of the Chassepot rifle, with which they were armed. 'Our Chassepots did wonders" are the concluding words of General de Failly's telegraphic despatch, penned, no doubt, for Prussian satisfaction.

The rumours of Ministerial resignations which have been more or less current throughout the autumn have at last assumed some kind of consistency. It is now very generally believed that the Marquis de Lavalette's resignation of the Ministry of the Interior will be accepted, and that his successor will be, not M. Rouher, as has been stated, but M. Pinard, Councillor of State, and formerly Procureur-Général of Douai, reputed one of the best speakers in the Corps Législatif. It is thought that M. Beneditti will be recalled from Berlin, and that the Marquis de Lavalette will be appointed French Ambassador at that Court—it is said, with the desire of promoting an *entente cordiale* with Prussia, which can hardly be brought about by M. Beneditti, who had the negotiation of the unpleasant Luxemburg affair. M. Rouher will give up the portfolio of finance, it is believed, in which case M. Magne has been named as his successor.

Lord Lyons, our new Ambassador here, has been officially received at the Tuileries by the Emperor, to whom he presented the letters accrediting him to the French Court. Of course, the speeches made on this occasion contained the usual complimentary phrases; but that of the Emperor, who never loses an opportunity of reiterating his desire to be on friendly terms with England, contained something more. "From the commencement of my reign," remarked he, "one of my most constant desires has been to maintain with Great Britain those friendly relations which have already produced so many good results." It is impossible to question the truth of this statement, or to deny that the Emperor has made some serious sacrifices during the past fifteen years solely to prevent the good relations which exist between the two countries from being disturbed. The Marquis de Moustier was, of course, present.

The persons arrested at the cemetery at Montmartre have been apprised that owing to the police authorities, "out of regard to the sacred quiet of the cemetery," not having summoned them to disperse by roll of drum, in accordance with the law, before proceeding to make arrests, the charge against them of illegally assembling has been abandoned. A certain number of those arrested are, however, still retained in custody on the charge of having uttered seditious cries.

It is hardly possible to realise the striking change which has come over Paris since the closing of the Exhibition. Although the summer voitures have been laid up for the season, it is possible now to get even half a dozen cabs in any quarter of Paris without difficulty. It is a rare thing, too, to see the notice "complet" above the doors of omnibuses travelling along the most frequented routes. The once-crowded cafés and restaurants are now comparatively deserted; and, beyond the customary percentage of English and Americans, one does not encounter a single foreigner, nor one provincial on the boulevards. At the theatres, too, there is no need now to take places a week beforehand, and even Mdlle. Schneider, in the "Grande Duchesse de Gérolstein," no longer fills the Variétés. As for the Exhibition, it is already a wreck, and the park will soon become a desert. Belts of vehicles two and three deep no longer encircle the Champ de Mars; but pouring from the various entrances are furniture and other vans and heavy trucks laden with packing-cases, huge pieces of machinery, and now and then some colossal bronze statue or a group of marble sculpture. The thousand and one structures in the park are cleared of their contents, and the smaller chalets and pavilions are announced for sale. In the Exhibition building, one is astounded to see how rapidly what it took so long to get together has been dispersed. Not only are nineteen twentieths of the objects displayed by French exhibitors removed from the building, but the stalls and cases are all gone, and even the flooring (which does not belong to the Imperial Commission) is for the most part pulled up. Other States are making rapid if not equal progress—the Orientals, who were sadly behindhand at the opening, having outstripped all the nations of the West, and vanished with everything that belongs to them clean out of the building. In the English section great activity prevails, and packing up is going on in every direction. The old landmarks of the Exhibition, such as the Rue d'Angleterre, with Dobson and Greene's glass stands, and Hancock's and Elkington's show of plate, are no longer recognisable; one has to make one's way across barriers of packing-cases, casks, and crates, piles of brown paper, tow, haybands, and shavings, where but a few days since were handsome avenues in which countless treasures of art and industry were displayed.

A large proportion of English exhibitors complain of the results of the Exhibition in a commercial point of view. Only some half dozen or so appear to have made sales which they consider at all commensurate to the expenses they have incurred. Minton and Co. are the sole English exhibitors who literally sold every object which they exhibited. Among their customers were the Emperor, the Empress, the King of Prussia, the Princess Royal of Prussia, the Grand Duchess Marie, and Princess Mathilde. Wedgwood sold all his jasper ware—white figures and ornaments on a grey blue ground, designed for the most part by Flaxman—including a breakfast service of this ware selected by the Emperor. Elkington's sold the Emperor a service of plate; Delries and Son sold him an engraved glass dessert-service; and of Hancock, Son, and Co. he purchased a silver vase. The sales of jewellery made by the latter firm were very considerable; as were those, though in a less degree, by Harry Emmanuel, and Phillips and Co., of Cockspur-street. Besides the foregoing, the only sales of any particular consequence effected by English exhibitors were among the sewing-machine manufacturers. The Howe Company, of Regent-street, which took the gold medal for these machines, sold on an average twenty per day during the entire seven months the Exhibition was open. The Burton brewers, of course, did a considerable sale; Allsopp and Son more than any of them, for they had secured two of the most popular restaurants in the Exhibition to sell their pale ale only—namely, Bertram and Roberts's, and the restaurant Gousset. The agents for the town of Manchester did not sell a single yard of calico nor a single scrap of anything else for any one of the numerous firms they represented; and James Platt and Co., whose tweeds are known and appreciated in every corner of the globe where the indispensable male garment is worn, did not sell, I am informed, a single ell of goods.

On the other hand, English buyers were in considerable force at the Paris Universal Exhibition. Many thousand objects of art have been purchased by English private collectors alone. The authorities at South Kensington Museum would have purchased largely had they had the necessary funds at their disposal; but they do not appear to have had the command of even the £15,000 which Parliament voted them, for the Treasury would only consent to its expenditure on condition that it was saved out of the original grant of £116,600 for the purposes of the Exhibition. They purchased, however, Fourdinois' magnificent inlaid cabinet—unquestionably the gem of the entire Exhibition—for £2700, and gave, on the recommendation of Lord Foley and others, £1100 for Signor Castellani's collection of Italian peasant jewellery. They also purchased the Theymar collection of Arabian and Cairene ornaments, and sundry other less important objects. The Marquis Ginori's exhibition of Doccia ware was purchased for the most part by Phillips and Co., of New Bond-street; Messrs. Goode, Agnew and Co. and Miller and Co., of Edinburgh, appear to have bought nearly everything that Phillips did not select. But by far the largest purchasers at the Exhibition were Grant and Gask, of Oxford-street, who purchased upwards of £100,000 worth of goods, exposed by some three hundred exhibitors, including Lyons silks, brocatelles, velours decoupé, robes à disposition, &c., to the value of more than £40,000, besides a considerable quantity of real lace and Indian shawls, velvets, furs, mantles, and the whole of the handsome made-up robes, Court and other dresses, which used to attract such crowds of the gentler sex around them in the grand vestibule. Jay and Co., of Regent-street, bought the whole of the black crapes exhibited by Grout and Co., of Norwich; and Lewis and Allenby and Peter Robinson purchased a large quantity of Lyons silks; the latter, too, carried off some of the best gloves exhibited by the first French manufacturers.

SPAIN.

The Cortes will meet on Dec. 27. It is stated that the new budget will show considerable reductions in the expenditure.

A Royal decree was issued on Tuesday ordering that the Governor of Porto Rico shall, in all military matters, be subordinate to the Captain-General of Cuba. General Lersundi will leave for Cuba on the 30th inst.

ITALY.

The battle, or skirmish, of Mentana (not Montana, as it was at first called) has emerged from the obscurity which at first hung over it, and from both sides we have a tolerably consistent story. The numbers engaged appear to have been about equal, and among Garibaldi's followers there must have been a large number of men inured to fighting and accustomed to discipline; but the presence of 2000 French soldiers, under a French General, and armed with the new French rifle, gave the Papal army heavy odds. The French were engaged towards the close of the day, though their loss was trifling, and it was by bringing them into action that the issue of the conflict was decided.

Garibaldi remains in confinement at Varignano, and the Italian army has withdrawn entirely from the Papal territory, leaving the French in Rome.

The *Moniteur* again intimates that if the Italian Government perseveres in the path upon which it has entered the friendly relations between France and Italy will continue to be strengthened and developed. No notice appears, however, to be taken by the French official journal of the circular wherein General Menabrea says that, as the conditions whereupon the French troops were to be withdrawn from the Papal States are now fulfilled, Italy expects that the Imperial Government, in its turn, will discontinue its intervention.

The Minister of Foreign Affairs has addressed a circular to the diplomatic agents of Italy abroad explaining the development and present state of the Roman question.

The King has signed a decree allotting 50,000*l.* to be distributed in aid of the wounded in the Roman expedition and of the families of the killed.

M. Mazzini has addressed one of his characteristic proclamations to the Italian people. It is dated the 8th inst., and it contains a vehement denunciation of the King's Government.

Rear-Admiral Provano has been appointed Minister of Marine.

Senator Montezemolo has been appointed Prefect at Naples.

AUSTRIA.

The Emperor Francis Joseph arrived in Vienna yesterday week. He was received with every token of welcome.

The King of Greece and his young bride arrived at Vienna on Tuesday, and were received with much state by the Emperor.

In Monday's sitting of the Committee of the Lower House on the compromise with Hungary, the Minister of Finance made a speech in which he announced that henceforth all excess of expenditure over revenue would be entirely avoided.

Kosenth has been elected a member of the Croatian Diet.

PRUSSIA.

A Royal decree was issued yesterday week convoking the Prussian Diet for the 15th inst.

The elections appear to have resulted in a working majority for the Government.

After a long delay judgment has been given against Herr Twesten, who was tried some time since for the speech he made in the Chamber of Deputies on the subject of the administration of justice in Prussia. He has been sentenced to two years' imprisonment.

The final ratifications of the treaties of military alliance between Bavaria, Wirtemberg, Baden, and the North German Confederation have been exchanged at Berlin.

RUSSIA.

The Czar started from Odessa on the 8th upon his return to the capital, by way of Czernowitz.

The Empress left Moscow on the 11th to return to St. Petersburg.

The King and Queen of the Hellenes left Zarskoe Selo on the 9th. The Crown Prince of Denmark returned to St. Petersburg, where he was to remain a few days.

THE UNITED STATES.

The President has appointed the 28th inst. as a day of thanksgiving and prayer.

Clarksville, Bagdad, Brownsville, and other towns of Texas were greatly injured by the recent storm. Many lives were lost, and in Matamoros 1500 houses were blown down.

The public debt of the United States is officially returned at 2,630,000,000 dols.—that is, about £520,000,000 sterling of our money.

AUSTRALIA.

In advance of the incoming Australian mail, we have news from Melbourne to Sept. 27.

The Ministerial crisis, arising out of the rejection of the Darling grant by the Legislative Council, still continued; and, though Parliament had reassembled, it had failed to arrive at a settlement of the difficulty.

Victoria has withdrawn from the arrangement agreed upon at the Intercolonial Postal Conference, in consequence of Sydney being selected as the terminal port for the mail-steamers.

Another violent typhoon has occurred at Hong-Kong, and has caused immense damage to property along the shore.

Two men recently died suddenly at a Canadian tavern after drinking a cup of coffee. The landlady called the police, who suspected her of having poisoned the men. She protested she had not, and to prove the harmlessness of the coffee drank a cup herself, when she also fell down dead. An examination of the coffee-pot showed that a bunch of matches had been boiled with the coffee.

The English director of the Suez Canal, Mr. D. A. Lange, writes to the *Times* stating that there is no question about the completion of the undertaking. By the latest reports there remained only 44,000,000 cubic metres of earthwork to be done. Mr. Lange calculates that 2,000,000 cubic metres will be removed every month, and that consequently the canal will be ready for opening in about twenty months' time.

"NOTHING IN THE PAPERS."

"WHO built the House of Commons?" is a question which is laid aside for the more practical one, "Who shall alter it?" For altered it must be, that is certain, and not the less so because Mr. Disraeli has announced his intention of adding to the numbers of our representatives—that is, of those of Scotland. Mr. Barry claims hereditary right to do the work, and to follow out the original intentions of his father, who was far too much controlled when engaged on his *magnum opus*. The House of Commons is too small; there is bad accommodation for the reporters, who are the most important part of the audience; there are no good places for distinguished visitors; and the arrangements for taking the divisions are necessarily inconvenient. I do not say anything about the public. I hope that there will be no great addition to the gallery for mere strangers. It will be a very bad thing, indeed, if the outsiders are let in to an extent that shall make their presence felt in the slightest degree—that shall induce a single member to speak with the hope of interesting them, or that shall give them courage to signify in any way their view of a proceeding or a sentiment. On this point we must all see that the House is thoroughly right in its jealousy. As regards the ladies, it is hard, of course, that there should be any sight that a lady cannot see; and it is harder still that a lady who is so kind as to pretend to an interest in her lord's political avocations should not be able to manifest that affectionate hypocrisy by attendance at debates. But perhaps enough will have been done when the ladies have a small but comfortable gallery, whence they can see well. The members and the reporters are the persons to be considered. Mr. Barry has a bold scheme. Outside the eastern division lobby, and separated from the river terrace only by a library corridor and by refreshment-rooms, is a large court, known as the Commons' Court, considerably larger than the House. Mr. Barry proposes to build upon this and on the site of the refreshment-rooms a fine new House of Commons, but to preserve the existing house for other than its present purpose. The idea has great merit, and is so simple and straightforward that one scarcely dares hope for its adoption.

Surely there can be no serious intention of abolishing the costermonger. The idea is too preposterous; and, unlike an admirable contemporary, the *Spectator*, I feel it difficult not to be in good humour about it, for it is impossible to believe that an act of such cruelty is in contemplation. If, however, such be really the case, it is the duty of everybody who can shape a sentence to shape one of protest. Independently of the fact that there are some 50,000 men who, with wives and children, get their daily food by carrying on the traffic which is menaced, there are myriads of poor persons who are supplied by the costermongers, and whom you might as well tell to go to the Albion tavern for a supply as to a regular shop. The notion is too outrageous to be entertained, and if there really be any doubt as to the intentions of the authorities, the metropolitan members will surely have that doubt set at rest in the House of Commons before this day week. I am bound to say, however, that the costermonger is a most aggravating person. For when his hideous bellow strikes on your ear you are full of rage at the outrage, and you stalk up to him with a scowl; and then you see the industrious, bellowing creature pushing with all his might at a tremendous load, the sign of the curse of labour fluent on his brow, and a patient look which disarms all your wrath, until you forget his face, and again hear his howl. Touching this matter, perhaps, something might be done. I would not drive away a single barrow. It is all nonsense about these poor fellows stopping up the traffic. They do not come where traffic is thick; they could do no business there. But they do come into streets in which a very few houses hold inmates who deal with "costers," and in which most of the houses hold men who are engaged in important business, and for the sake of the half dozen squalid dens that patronise the barrow, our friends of the leathern lungs utter sudden and intolerable bellowings. It is rather vexatious to have to stop a dialogue with our friend and publisher, and to pause in our calculations and suggestions, until that fellow has done yelling, and then to resume only until his successor comes to howl. Would it be any great hardship to silence our outside friend, at least in neighbourhoods where the majority decidedly do not want him?

If ever tables were turned—I don't mean the juggling way, exposed by the late Michael Faraday—it has been in America. We must all remember the days of slavery, when vigilance committees of slaveowners met, and used to conduct a supposed abolitionist out of the district, perhaps with a slight testimonial in the shape of wheals from a cowhide whip. No secret was made of the matter: the process was publicly owned and defended in the southern newspapers, and such of the northern ones as advocated the institution, and did their utmost to cavesom the American mind against England, because, having extinguished slavery in her colonies, she protested against it elsewhere. That is all gone by now; but it is not ill to refer to it, because the saddle should be put on the right horse. It was the journals in the interest of the slaveowners that were always bitter against this country. The cause having ceased, the effect will, I trust, subside. But who would have dared to predict so complete a change of circumstances as the last news announces? The negroes have formed vigilance committees, and have ordered white persons to leave districts for speaking against negro candidates and for dismissing negro workmen. It is, of course, utterly wrong and indefensible, and we may hope that every serious attempt at black mob rule will be sternly suppressed by an order-loving nation. But it is not ungenerous to note how "the whirligig of time has brought about his revenges;" it is a point in history which cannot be left unmarked.

Speaking my solitary sentiment, for which no one else is to be responsible, I am very glad that the Lord Mayor's Show, such as it was, has been half abandoned; and I hope the next chief magistrate will go and take his oaths at Westminster just as I went and took mine upon a certain occasion when I vowed allegiance. But I proceed to say, also for myself only, that I am sorry the Lord Mayor's Show was allowed to become so ugly and poor that the merchant princes put it down, haughtily. I do not like extinguishing national holidays, and sights, and traditions. There has been assuredly no one feature in the show, so long as I can remember, that should have saved it from doom. But then, why has there not been? Why cannot London have a pageant? Has the art of making such things gone out? Have we lost the skill

That so did take Eliza and our James?

I demand—and suppose that I shall have a long time to pause for a reply—why the people are not to be gratified with a beautiful show, and why the little children are to be told that the great day of their lives is to be a day no more? It would cost money and stop business. All right. Let it do both. London has plenty of money, and Londoners do a great deal more business than is good for them. Well, but the roughs come out and make riot. Let the police be reinforced and told to use their bludgeons on the heads of the roughs. The hint would instantly be taken; for the street ruffian fears nothing but bodily pain, and of that he has the most cowardly dread. Are the pleasures of the people of England to be suppressed because of a few hundreds of cads? I clamour for a pageant—a gorgeous, thoughtful, significant Pageant, such as Ben Jonson would have invented over his wine, at the Sun, the Dog, the Triple Tun. It is of no use to argue with people who tell you that a show is of no use. The best way is simply to contradict such people, and change the subject. I write to those who know better things, and believe in sights, and processions, and national holidays, and children's looking out for festivals. Such folk will agree with me, and not think of arguing, but come to details. Well, we would not have the pageant in November, that is certain. We want the sun to bring up the colours of the procession, and to make us all cheerful, and just thirsty enough to make refreshment acceptable—do you think we would have a teetotal procession? Look at the jolly pictures of such things in the olden time, and see the guests in the balconies quaffing to the health of their favourites in the show. But what is the use of talking? Let the City give me £20,000 and the police, and I will call such a council of artists and poets as shall devise for her a sight worthy of the Queen of the Cities, and it shall be paraded for all the people from the Tower to the Marble Arch.

CHURCH AND UNIVERSITIES.

The Rev. Archibald Boyd was gazetted on Tuesday night as Dean of Exeter.

The Bishop of Ripon, on Tuesday, consecrated a new church at Staincliffe-in-Batley. The building will accommodate 500 or 600 persons, and it cost about £6000.

The Rev. W. J. Butler, Vicar of Wantage, who was elected Bishop of the diocese of Natal, in the room of Dr. Colenso, deposed by Bishop Grey, "Metropolitan of South Africa," has at length refused to accept the appointment.

All Saints' Church at Babbicombe, near Torquay, erected from the designs of Mr. Butterfield, architect, was consecrated, yesterday week, by the Bishop of Oxford, acting for the Bishop of Exeter. Miss Patteson and the Rev. George S. Hole are among the largest contributors to the building fund.

The parish church of Weston, Herts, was reopened on Oct. 15, after undergoing a restoration which has occupied upwards of a year, in the course of which the central tower has been rebuilt from the foundations, the south aisle roofed, the nave and aisle reseated with open benches and repaved, the whole church heated with warm water, at a cost of £2000.

Some new schools were opened at Dewsbury, on Tuesday, by the Bishop of Ripon. The occasion was celebrated by a special service at St. Mark's Church, and afterwards a luncheon was given in the school-room, at which the Rev. S. Vaughan presided. The Bishop of Ripon, in reply to the toast of his health, expressed his gratification at the work accomplished that day, and dwelt upon the importance of improving popular education.

The new Church of St. Mary-the-Virgin, built by Lord Beauchamp for the parish of Madresfield, was consecrated on Sunday by the Bishop of Worcester, who, with a large party of visitors, was the guest of his Lordship at Madresfield Court. The church, which is a good specimen of Gothic, was designed by Mr. Preedy. It has a particularly fine tower and spire, which form a striking object in the view from the Malvern Hills over the valley of the Severn.

On the Octave of All Saints, the Church of All Saints, Springfield, Chelmsford, having undergone thorough restoration, under the superintendence of Mr. Joseph Clarke, was reopened by the Bishop of Rochester. During the progress of the works a most interesting discovery has been made. In a portion of the roof, now removed, was found an illuminated and noted Service-book (Sarum use) in MS., of the thirteenth century, in an almost perfect state of preservation.

At Cambridge the Rev. J. T. Lang, B.A., Scholar of Gonville and Caius (12th Wrangler, 1866), has been elected a Fellow of Corpus Christi College.——The result of the four-oar races on Tuesday was a comparatively easy victory for Emmanuel. The boats left in from Monday's racing were Emmanuel, First Trinity, and Lady Margaret. Emmanuel won by eight seconds. The stroke of the Emmanuel boat was formerly an Oxford man. Mr. Pinckney pulled admirably for First Trinity, and the race was really a good one. Lady Margaret would have done better had not one of her crew caught rather a damaging "crab;" Mr. Collard was quite up to his past reputation. The races were witnessed by large numbers of University men.

COUNTRY NEWS.

Lord Dunboyne has been elected a representative peer for Ireland, in the room of the late Lord Rosse.

Sir Lawrence and Lady Palk attended the School of Art at Torquay, on Thursday week, and presented the prizes to the students of the science and art classes.

Mr. Thompson, M.P., was entertained, on Tuesday, at dinner, in St. George's Hall, Bradford, in celebration of his election as one of the members for that borough.

Subscriptions, from £25 to £5000, continue to be paid in for the new buildings for the University of Glasgow and Hospital, and the total already amounts to £101,600.

The Earl of Devon in a speech at an agricultural meeting at Dawlish, on Tuesday, strongly enforced the necessity for improving the residences and the education of agricultural labourers.

It has been decided to dissolve the Manchester Natural History Society and to transfer its collections and property—except a sum of £1300, which is to be presented to the Literary and Philosophical Society—to the trustees of Owen's College.

The first periodical congress, convened in pursuance of a resolution of the Scholastic Registration Association, was held at the Midland Institute, Birmingham, on Wednesday—the Dev. Dr. Collis, of Bromsgrove, occupied the chair.

A testimonial to Sergeant Lane, last winner of the Queen's Prize at Wimbledon, was presented at Bristol, on Thursday week, by the Mayor (Mr. E. S. Robinson). The testimonial consists of a silver tea and coffee service, of the value of £90.

The funeral of Constable Kenna, who was lately shot in Dublin, took place last Saturday. Five hundred of the Dublin police force followed the hearse, marching five deep. The Lord Mayor and some members of the Corporation were also in the procession.

Mr. Graham, M.P., distributed the Society of Arts' prizes and certificates on Monday night to the successful students of the Glasgow Athenæum. He delivered an address bearing chiefly upon the value and importance of technical education, especially in a commercial city like Glasgow.

There has been more rioting in Devonshire. At Barnstaple, yesterday week, a large mob destroyed bakers' and butchers' shops, and the owner of a flour-mill, who in defending his property had fired upon the rioters, only saved his premises from destruction by distributing food and cider among the crowd.

Mr. John Straker has been elected chairman of the north of England coal trade, and Mr. H. T. Morton vice-chairman. It is proposed to erect a hall in Newcastle-on-Tyne for the North of England Institute of Mining Engineers and the coal trade, and also a memorial hall to the late Mr. Nicholas Wood, the eminent mining engineer.

The Lincolnshire "Colour Ball"—formerly called the "Stuff Ball," in consequence of its visitors in olden times being compelled to appear in woollen stuff, then the manufacture of Lincolnshire—was held in Lincoln, on Wednesday week, in the County Assembly Rooms. This annual assemblage, now called the "Colour Ball," owing to the adoption of any particular colour which the lady patroneresses may think proper to select, was patronised by the Duchess of Ancaster a century ago, and from that time it has been attended by the élite of the county. On this occasion the colour was cerise.

There were disturbances at Oxford, on Saturday night, which wore the appearance of a "town and gown" riot, but they were followed on Monday by a state of things which caused the greatest alarm throughout the city. Bread riots were threatened; and it was deemed prudent to swear in special constables and to obtain the assistance of a detachment of Guards from Windsor. Large mobs assembled in the streets at night, and the windows of the police station and of some of the bakers' shops were broken. The Riot Act was read, and at a late hour the people were dispersed without the aid of the troops.

The annual dinner of the Prince of Wales's Yacht Club was held on Monday night, at the Freemasons' Tavern. A large party assembled, presided over by Mr. Cecil Long, the commodore.

In a paragraph in our last week's impression, announcing that Messrs. A. Marion, Son, and Co. have published a photograph from Mr. Robert B. Martineau's picture of "The Last Day in the Old Home," Mr. Robinson was erroneously mentioned as the photographer instead of Signor Caldesi. The photograph was taken from a drawing in black and white, made by Signor Morelli, from the picture.

The births of 2270 children—1187 boys and 1083 girls—were registered in London last week. In the corresponding weeks of ten years, 1857-66, the average number, corrected for increase of population, is 2081. The deaths registered in London during the week were 1193. It was the forty-fifth week of the year, and the average number of deaths for that week is, with a correction for increase of population, 1417. The deaths in the present return are less by 222 than the estimated number. The deaths from zymotic diseases were 234, the corrected average number being 347. The deaths from smallpox were 9, from scarlatina 39, from whooping-cough 27, from typhus 42, from diarrhœa 21, and from measles 37. 148 persons died last week from phthisis, 154 from bronchitis, 82 from pneumonia, and 51 from diseases of the heart. The deaths of three persons who were killed by horses or carriages in the streets were registered last week.——In the week that ended on Saturday, Nov. 9, 4613 births and 2706 deaths were registered in London and twelve other large towns of the United Kingdom. The annual rate of mortality was 28 per 1000 persons living. The annual rate of mortality last week was 20 per 1000 in London, 27 in Edinburgh, and 25 in Dublin, 20 in Bristol, 28 in Birmingham, 26 in Liverpool, 26 in Manchester, 27 in Salford, 24 in Sheffield, 24 in Leeds, 28 in Hull, 29 in Newcastle-on-Tyne, and 27 in Glasgow.——The present system of registration has been in operation for thirty years; and a legal certificate of a birth, death, or marriage in England or Wales during that period may be obtained at the General Register Office, Somerset House.

THE WALRUS IN THE ZOOLOGICAL SOCIETY'S GARDENS.

THE young walrus which was placed, a fortnight since, in the gardens of the Zoological Society of London, is thriving and lively, under the care of Mr. Bartlett, the very attentive and judicious superintendent, by whom he was purchased and brought from Dundee. This animal, which is a cub half-grown, was captured on Aug. 28, by Captain Richard Wells, of the whaling steam-ship Arctic, between Cumberland Island and Disco Island, in the middle of Davis's Strait, on the west coast of Greenland. A herd of two or three hundred walruses being found basking on the ice, Captain Wells sent his boats to attack them. One very large female, which was amongst those killed, was fastened by a rope to the stern of the boat, to be towed to the ship. This cub would not quit the body of its mother, but clung fast to it, until the female was hauled up, after which he allowed himself also to be caught with a rope about his neck. When the ship returned to Dundee, after a perilous and unsuccessful whaling voyage, Mr. Bartlett went to that port and bought the walrus for the Zoological Society. He at once brought the animal to London, by one of the regular line of steamers, when the large box, in which it had been confined on board the Arctic, was conveyed into the Regent's Park Gardens, and set down close to the iron railing, on the western side-path, behind the seal's pond, and just outside the inclosure round the smaller pond. This inclosed grass-plot, with the small pond or basin in the midst of it, which is filled with brackish water, forms the playground of the walrus by day; and he spends the night in his box, a plank of which has been removed, as well as a piece of the iron railing, to allow him to pass in and out. It is necessary, however, to close the box at night, and to keep watch over his movements in the daytime, or he would soon climb over the railing and escape. "Jemmy" is extremely wilful, and appears playful, scrambling after the men who enter the inclosure, and butting at them, rather testily, with his great hairy muzzle, which has a pair of incipient tusks, scarcely two inches long. The age of this walrus is supposed to be seven or eight months, and he is above 7 ft. in length. When full grown, he may attain a length of 16 ft., with 10 ft. girth, weighing about 3000 lb. His tusks, as shown by the skull and tusks of another which are suspended on a tree in the inclosure, will then be 14 in., or perhaps 20 in., in length, curving downwards from the upper jaw, and pointing towards the ground, unlike the tusks of the elephant. Some interesting remarks on the structure and uses both of the tusks and of the long, bristly whiskers, or rather moustaches, of this singular animal, will be found in Mr. Frank Buckland's description of him in the number of *Land and Water* for last week. In the opinion of that observant naturalist, and of Mr. Bartlett, the bristles of the whiskers, which communicate with the brain by large and highly sensitive nerves—each bristle, in fact, being hollow, and filled with nerve-substance—are employed by the walrus to grope in the sea-sand for shrimps and prawns, or soft mollusks, which supply a great part of his natural food. The tusks are probably serviceable in raking up the sand and weeds to assist his search; the whiskers are used as brushes, to draw to his mouth whatever small articles he likes, and to push away what he dislikes. By these and other observations, Mr. Bartlett discovered how to feed the newly-arrived guest. While on board the Arctic, the diet of the walrus had been pork fat, which does not seem to have agreed with him, and he could not swallow herrings. He is now supplied, every day, with two quarts of whelks and four quarts of mussels, divested of their shells and mixed together, which is the best food he could eat. There is every reason to hope that he will enjoy a long and happy life in the Zoological Society's Gardens, and afford great amusement to the visitors for many seasons to come. The only other living specimen which has appeared in the gardens was brought there in 1853, but died two or three days after its arrival.

FATAL COAL-MINE EXPLOSION IN SOUTH WALES.

ANOTHER of those dreadful catastrophes which of late have appeared to succeed each other with unaccustomed rapidity is now reported from South Wales. An explosion in a coal-mine has sent, it is to be feared, more than a hundred souls into eternity. As generally, and indeed necessarily, happens on these shocking occasions, the extent of the fatality cannot at once be ascertained. It is never known exactly how many men may be in the pit, and even if the numbers could be certified there is always a chance, though, unhappily, a slender one, that some of them may be released alive. The Ferndale Colliery, the scene of this appalling calamity, is situated in the Rhondda Valley, in the heart of the mining districts of Glamorganshire. The mine itself is comparatively a new one, having been only recently opened, but the works have been pushed on with great rapidity until they have approached the famous Merthyr seam of coal. As usual, a kind of village or hamlet has sprung into existence near the mine, and there a population of about 800 souls is lodged in houses rudely built of wood, like American log-huts. On Friday morning, the 8th inst., the mist lay thick in the Rhondda Valley. The barometer showed the atmosphere to be extremely heavy. At the bottom of the valley, where the Ferndale Colliery lies, the fog was especially thick. But no one seems to have thought that there was the least danger, or that there was any reason for taking unusual precautions. The full number of colliers were allowed to go down to their work, and during the morning all went on as usual. In the afternoon of that day an explosion shook the whole mine. A volume of flame rushed up the shaft with a cloud of ashes and stones, as in the eruption of a volcano. There was no need to tell the inhabitants of the valley the import of the sound. They rushed to the pit's mouth with a forecast of the truth only too certain, and in an incredibly short time workmen arrived from all parts of the district to the succour or rescue of their brethren. It was too late; or, rather, there had never been a moment at which human help could have been of any avail. The violence of the concussion had so shaken the ground that the earth fell in along the galleries and passages of the mine and precluded escape. It was like an explosion in a tunnel, not only filling the place with a poisonous atmosphere, but bringing the roof in too. In such a case the first demand is for a guide well acquainted with the pit. Every mine has its ways, and its turns, and its workings, like an underground city, and the great object is to learn the plan. At Ferndale, the manager of the colliery, who was, above all others, competent to give this information, was known to have been in the pit at the time of the explosion, and search was immediately made for him, in order that his directions might be obtained for the rescue of others; but though he was soon found, he was quite dead. So the exploring parties had to work by instinct, or with what hints they could get, and, unhappily, every step of their progress showed the hopeless character of the calamity. The victims were reached in batches of ten or twelve together, after distressing intervals of suspense. The working parties came upon a fall of earth blocking the way, at which they toiled painfully with pick and shovel till the obstacle was removed. Behind it lay a group of corpses, charred or suffocated; and then a little further on was another "fall," to be attacked in like manner, and with a like discovery. On Saturday a gentleman who had formerly been manager of the Ferndale pit arrived on the spot, and other managers, together with the Queen's Inspector of Mines, soon followed; but there was little to be done. Not only the miners, but the very mine itself appears to have been destroyed. The explosion, besides its ordinary effects, acted like an earthquake, too; and the unhappy victims who were neither burnt by firedamp nor suffocated by mephitic air must have been buried alive. The men engaged in the mine are said to have been over 300 in number at the time of the explosion. On Saturday morning it was ascertained that 183 had come to bank uninjured. These were probably from the dip workings. Twenty-one were brought up, some badly burnt and not expected to recover; fifty had been brought up dead; and there were, it was thought, more than a hundred in the pit, and no hopes were entertained as to these being alive. The search for bodies continues.

For the past week or two the preliminary signs of the coming disaster have been numerous. A number of minor explosions have occurred in various parts of the country, sounding like the stray shots of skirmishers preceding the grand crash of battle.

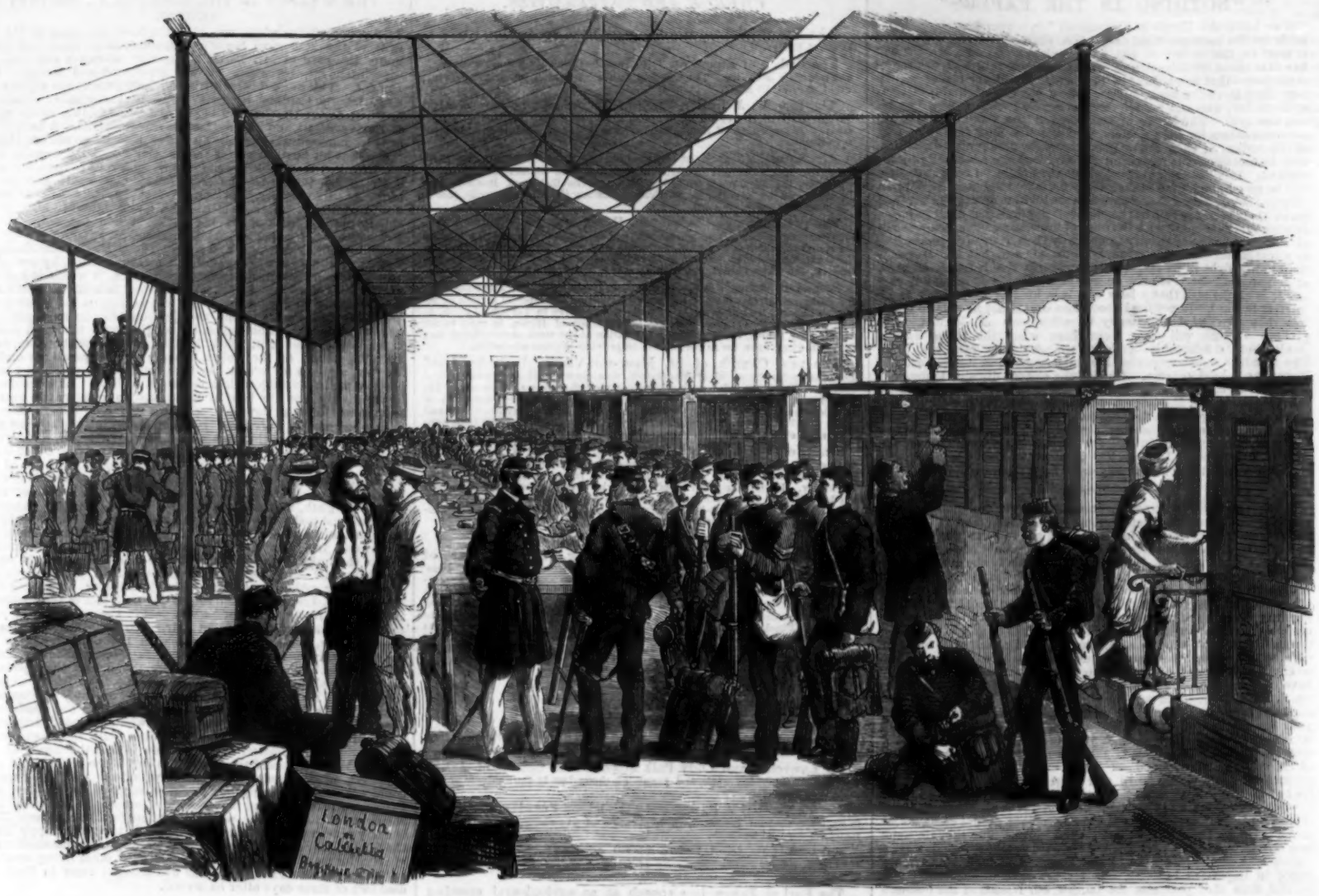
On the same day three men were killed by an explosion in a pit at Silverdale, near Newcastle-under-Lyme.

On Monday morning an explosion occurred at Homer Hill Colliery, near Stourbridge, the property of Messrs. Swindell and Evers, by which sixteen men were seriously injured.

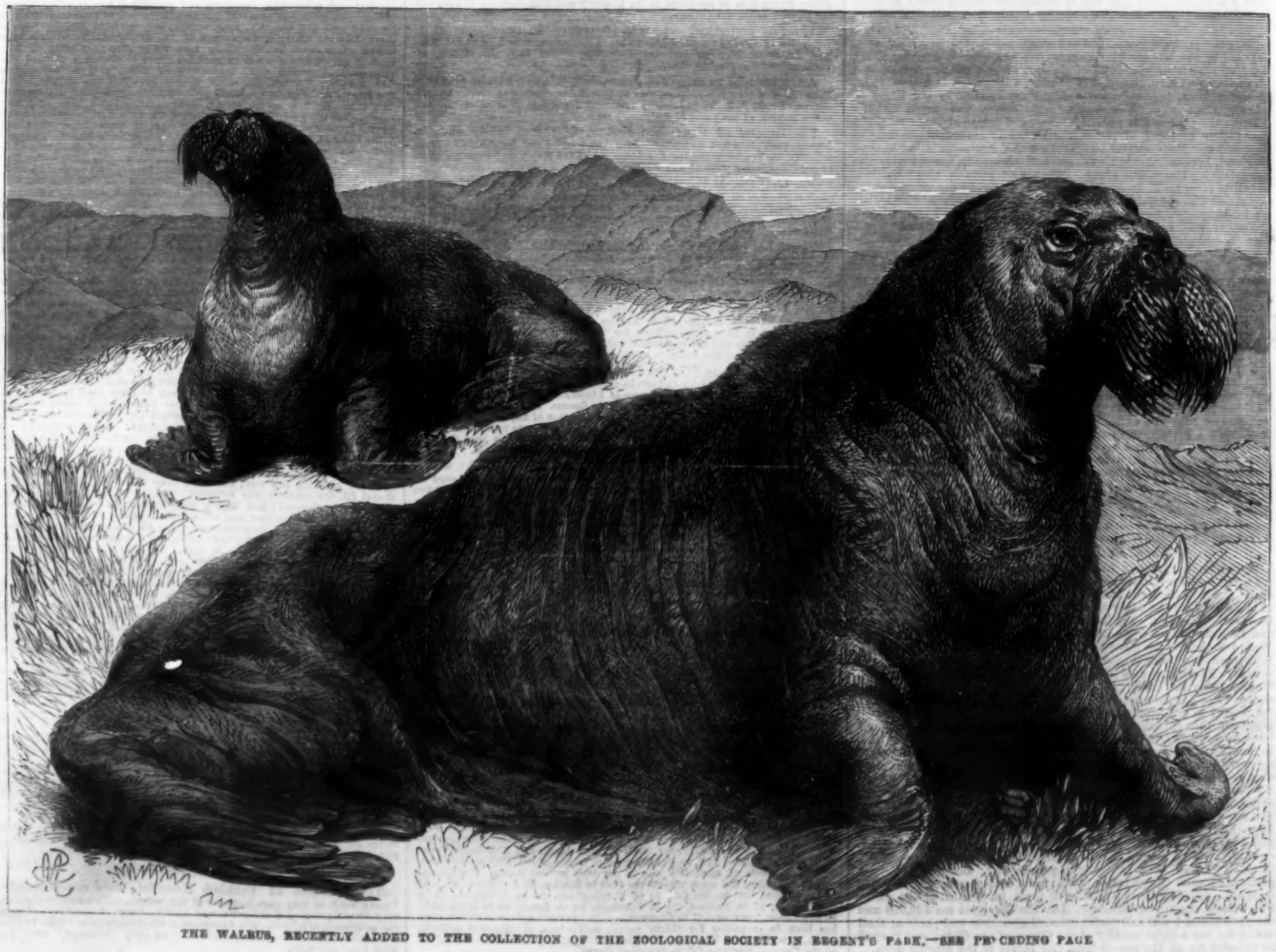
A fire of an alarming kind broke out in the Hetton Colliery, Durham, on Thursday week, and by it the lives of 200 pitmen were for a time placed in serious danger. All the men, however, were rescued except one poor fellow, named Robert Thompson, who was suffocated by the smoke. The fire was ultimately extinguished.

A boiler explosion took place on Monday at the Odessa Colliery, belonging to the Butterley Company, Langley Mill, near Nottingham, by which three men lost their lives and about ten or twelve others were injured.

The inmates of Bethlem Hospital were entertained, on Friday week, as they were last year at this season, with amateur theatricals, very cleverly managed and performed by the officers of the institution, with the assistance of friends. The burlesque or extravaganza of "The Illustrious Stranger," and the laughable farce of "An Ugly Customer," were played with great applause.



INDIAN RELIEFS EMBARKING AT SUEZ.—SEE PAGE 533.



THE WALRUS, RECENTLY ADDED TO THE COLLECTION OF THE ZOOLOGICAL SOCIETY IN REGENT'S PARK.—SEE PRECEDING PAGE

ARAB HORSES PRESENTED BY THE SULTAN OF TURKEY TO THE PRINCE OF WALES.—SEE NEXT PAGE.

ARAB HORSES GIVEN BY THE SULTAN TO THE PRINCE OF WALES.

THE gift of the Sultan of Turkey, our late guest in London, to his Royal Highness the Prince of Wales, consisting of four noble horses of the purest Arabian breed, has been mentioned in this Journal. The Engraving on the preceding page represents these superb animals, which have been placed in the stables of his Royal Highness at Marlborough House. The horses are named Ilderim, Derwisch, Touch, and Kaplan. Whether they are up to the Prince's weight is doubtful; but, though he may prefer one of his English hunters for his own personal use, he cannot but admire these elegant creatures of the East, and rejoice in their possession.

BIRTHS.

On the 9th inst., at 4, Devonshire-place, Portland-place, W., the wife of General Sir J. Aitchison, G.C.B., of a daughter.

On the 12th inst., at 77, Chester-square, the Hon. Mrs. A. Douglas Pennant, of a son.

On the 10th inst., at Fairholme, Upper Teddington, the wife of Theodore E. Thrupp, Esq., of a daughter.

On the 9th inst., at 35, George-square, Edinburgh, Mrs. Charles Lawson, jun., of a daughter.

On the 10th inst., at Arle House, near Cheltenham, the wife of Commander G. A. W. Welch, R.N., of a daughter.

MARRIAGES.

On the 12th inst., at Donhead, St. Andrew, Wilts, by the Rev. Charles Grove, assisted by the Rev. R. Bourne, Rector of the parish, Harvey John de Montmouncy, Esq., late of the Queen's Bays, eldest son of John de Montmouncy, Esq., of Castle Morres, in the county of Kilkenny, and the Hon. Mrs. de Montmouncy, to Grace Kathleen, eldest daughter of Thomas Fraser Grove, Esq., M.P. for South Wilts.

On the 6th inst., at St. Margaret's, Plumstead, by the Rev. J. McAllister, the Rev. Richardson Saunders, Rector of St. Anne's, Nassau, Bahamas, to Catharine Ann, only daughter of W. R. Earl, Esq., Shooter's-hill, Kent.

DEATHS.

On the 8th inst., at Doune Lodge, Perthshire, John, twelfth Earl of Moray.

On the 10th inst., after a few days' illness, at Benacre Hall, Suffolk, Lady William Godolphin Osborne.

Recently, Margaret Elphinstone de Flahault, Baroness Nairne in the Peerage of Scotland, Baroness Keith, of Stonehaven, Marischal, in the Peerage of Ireland, and Baroness Keith, of Banheath, in the county of Dumbarton, in the Peerage of the United Kingdom, aged 79.

On the 4th inst., at Liverpool, Daniel Price, Esq., of Hendon House, Hendon, Middlesex.

On the 4th inst., at his residence, Denton Court, Canterbury, William Willats, Esq., aged 76.

On the 11th inst., at 46, Clifton-gardens, Maida-vale, London, Edwd. Rudge, Esq., of Lincoln's Inn, barrister-at-law, eldest son of Edwd. Rudge, Esq., of Ewelme, Oxfordshire, aged 32. Friends will please accept this intimation.

*** *The charge for the insertion of Births, Marriages, and Deaths, is Five Shillings for each announcement.*

CALENDAR FOR THE WEEK ENDING NOVEMBER 23.

SUNDAY, Nov. 17.—Twenty-second Sunday after Trinity. Hugh Bishop of Lincoln. Death of Charlotte, Queen of George III., 1818.

MONDAY, 18.—Establishment of the Empire of Brazil, 1825. King Victor Emmanuel received by 70,000 Italians in the Amphitheatre at Verona. 1866. Moon's last quarter, 5h. 6m. p.m.

TUESDAY, 19.—Nicholas Poussin, painter, died 1665. Bishop John Wilkins, natural philosopher, died 1672.

WEDNESDAY, 20.—St. Edmund the King (martyred by the Danes, 870). Sir Edward Hawke defeated the French fleet, off Quiberon Bay, and averted an invasion, 1759.

THURSDAY, 21.—Henry Purcell, musical composer, died, 1695. Birth of the Princess Royal of England and Prussia, 1840. Re-establishment of the French Empire by a plebiscite, 1852.

FRIDAY, 22.—St. Cecilia, virgin and martyr, Professor George Wilson, natural philosopher, died, 1859.

SATURDAY, 23.—St. Clement, Bishop of Rome, martyr. Death of Sir Roger Newdigate, founder of the prize at Oxford, 1806; and of Sir John Barrow, geographer and biographer,, 1848.

TIMES OF HIGH WATER AT LONDON BRIDGE FOR THE WEEK ENDING NOVEMBER 23, 1867.

Sunday	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
h m	h m	h m	h m	h m	h m	h m
5 27	5 54	6 22	6 55	7 32	8 20	9 21
h m	h m	h m	h m	h m	h m	h m
9 49	10 35	11 9	11 49	—	—	0 6

THE WEATHER.

RESULTS OF METEOROLOGICAL OBSERVATIONS AT THE KEW OBSERVATORY OF THE BRITISH ASSOCIATION.

Lat. 51° 28′ 6″ N.; Long. 0° 18′ 47″ W.; Height above Sea, 24 feet.

Day.		Barometer Corrected.	Temperature in the Air.	Dew Point.	Relative Humidity. Amount of Cloud.	Thermometer Minimum. read at 12 P.M.	Thermometer Maximum. read at 12 P.M.	Wind. General Direction.	Wind. Horizontal Motion in Miles per Hour. Read at 12 A.M. and 12 P.M. next morning.	Rain in Inches. read at 12 A.M. next morning.
		Inches.	°	°	0-10	°	°		Miles.	In.
Nov.	6	30·460	40·3	36·6	·87	4	49·7	47·1	NNE. NW.	72	·000
	7	30·562	41·2	38·4	·84	0	29·5	49·2	NNW.	62	·004
	8	30·569	43·5	39·5	·88	1	29·3	51·5	WSW. WNW. NW.	68	·000
	9	30·493	43·2	43·3	99	10	29·2	47·1	W.	31	·000
	10	..	..	..	..	..	49·2	50·2	..	43	·080
	11	30·560	..	..	..	10	35·6	40·1	..	28	·000
	12	30·175	40·0	38·8	·96	10	31·0	41·2	E.	35	·000

The following are the readings of the meteorological instruments for the above days in order, at half-past nine a.m.:—

Barometer (in inches) corrected	30·444	30·583	30·660	30·615	30·546	30·357	30·210
Temperature of Air	36·9°	38·6°	39·6°	41·8°	45·2°	37·7°	39·1°
Temperature of Evaporation ..	36·2°	34·9°	35·8°	41·2°	41·7°	36·2°	38·1°
Direction of Wind	CALM.	CALM.	WSW.	W.	CALM.	CALM.	CALM.

THEATRE ROYAL, DRURY LANE.—Sole Lessee and Manager, Mr. F. B. Chatterton.—Triumphant and brilliant success. The Carnival of Venice, at the conclusion of the first act, has been unanimously pronounced by the press and the public to be one of the grandest spectacular effects ever witnessed on the stage.—On MONDAY, NOV. 11, and during the Week, her Majesty's servants will perform the new romantic Play, in four acts, entitled THE DOGE OF VENICE, adapted by Bayle Bernard from Lord Byron's tragedy of "Marino Faliero," with additions from the play of "Marino" by Casimir De La Vigne, and musically illustrated by selections from the operas of "Marino," by Donizetti, and the "Duo Foscari" and "Bravo" of Verdi and Mercadante, with new and magnificent scenery by Mr. William Beverley. The music selected and arranged by Mr. J. H. Tully; the dances and pantomimic action devised by Mr. J. Cormack; the costumes and carnival characters invented by Mr. R. W. Keene. The play is under the direction of Mr. Edward Stirling. Principal characters by Mr. Phelps, Messrs. J. C. Cowper, H. Sinclair, R. Phelps, Barrett, James Johnstone, C. Warner, W. M'Intyre, C. Harcourt, Webb, Temple, &c.; Mrs. Herman Vezin, Miss Gratton, &c. Increased orchestra and numerous chorus. To conclude with, each Evening, THE LADIES' CLUB—Mesdames Beatrix Shirley, Kate Harfleur, Gratton, Hudspeth, L. Wilmot, Mrs. H. Vandenhoff, Messrs. J. Rouse, Barrett, Harcourt, James Johnstone, W. C. Temple, &c. Doors open at Half-past Six; commence at Seven. Box Office open from Ten till Five daily.

THEATRE ROYAL, COVENT GARDEN.—Under the sole management of Mr. J. Russell.—Production of "La Grande Duchesse."—On MONDAY NEXT, NOV. 18, will be produced, with new Scenery, Costumes, and Appointments, Offenbach's Operatic and Spectacular Extravaganza, THE GRAND DUCHESS OF GEROLSTEIN. Principal characters by Messrs. W. Harrison, Stoyle, Frank Matthews, Odell, Fred. Payne, and Aynsley Cook; Miss Augusta Thomson and Miss Julia Mathews (her first appearance in England). Conductor, Mr. Betjemann. The NATIONAL ANTHEM will be sung at the conclusion of the performance. Commence at Eight. The Box-office is open daily from Ten till Five.

THEATRE ROYAL, HAYMARKET.—MONDAY, NOV. 18, and during the Week. Last Six Nights of Mr. Sothern in his famous character of Lord Dundreary, in consequence of the arrival in Town of Brother Sam, who will positively appear on Monday, Nov. 25. At Seven, THE WINNING CARD—Mr. Compton; at Quarter to Eight, OUR AMERICAN COUSIN—Lord Dundreary, Mr. Sothern; concluding with the SPECTRE BRIDEGROOM—Dickory, Mr. J. T. Raymond.

ROYAL ST. JAMES'S THEATRE.—The New Comedian, Mr. John S. Clarke, as Tyke, in THE SCHOOL OF REFORM, and Major de Boots, in A WIDOW HUNT.

ROYAL PRINCESS'S THEATRE.—On MONDAY and during the Week, at a Quarter to Eight, ARRAH NA POGUE—Mr. Dion Boucicault, Mr. Vining, Mr. D. Murray, Mrs. Dion Boucicault. Preceded by A LITTLE FLIRTATION; and followed by NO. 1 ROUND THE CORNER. A.B. On Monday, Nov. 25, "The Colleen Bawn," with Mr. and Mrs. Dion Boucicault.

THEATRE ROYAL, ADELPHI.—Sole Proprietor and Manager, Mr. Benjamin Webster. Directress, Mrs. Alfred Mellon.—MONDAY and during the Week, MAN IS NOT PERFECT, NOR WOMAN NEITHER—Mr. G. Belmore and Mrs. Alfred Mellon; MAUDE'S PERIL—Miss Herbert, Mr. Billington; and THE SCHOOL FOR TIGERS—Mrs. Alfred Mellon and Mr. G. Belmore.

THE AMERICAN CHAMPIONS ARE COMING.

ROYAL AMPHITHEATRE, High Holborn.—The GREAT AMERICAN CIRCUS, embracing the Champion Equestrians and Gymnasts of the United States, organised expressly for the Exposition Universelle in Paris, having concluded a brilliant and successful season in that city, will OPEN for the Holiday Season, at the New Royal Amphitheatre, on MONDAY WEEK, NOV. 25.

ROYAL AMPHITHEATRE and CIRCUS, High Holborn. Last Six Nights of the present Powerful Company. It being the concluding appearance of the present troupe, the programme each evening will embrace all the great acts for which the several artistes are renowned, including Le Jockey Anglais, the extraordinary Trick and Ménage Horses, the wonderful Fire Horse, the great Tunnel and Balloon Flights, &c. In addition, Dassie's magnificent Steed of Performing Ponies, Herr Paul Dassie, the Wonder of the World; Herr Dassie, the great Somersault Rider. Lauriat's Comic Ballet Every Evening. Doors open at Seven; Commence at Half-past Seven. Grand MORNING PERFORMANCE EVERY SATURDAY, at Half-past Two.

NEW SURREY THEATRE. — On MONDAY and during the Week, at Quarter-past Eight, the Romantic Drama, NOBODY'S CHILD: Joe (Nobody's Child), Mr. Creswick. Preceded, at Seven, by JANE EYRE.

CRYSTAL PALACE.—THIS DAY, SATURDAY, CONCERT and AFTERNOON PROMENADE.—Mdme. Sinico, Signor Foli, and Mr. Tom Hohler. Solo, Pianoforte, Miss Amy Coyne (her first appearance). Conductor, Mr. Manns. Programme includes Symphony in G (Oxford), Haydn; Overtures, "Zauberflöte," Mozart, and "L'Enfant Prodigue," Auber; Rondo Capriccioso, E minor, Mendelssohn, &c.

Admission, 2s. 6d.; Guinea Season-tickets free; Reserved Stalls, 2s. 6d., at Palace and 6, Exeter Hall.

The Concert Hall thoroughly inclosed and warm, and quite free from draught.

CRYSTAL PALACE.—Exceedingly Pleasant as a Place of Recreation and for Healthy Exercise. Moderately heated throughout. the Concert-room agreeably warmed. Now, when fog and mist prevail in the Metropolis, the Crystal Palace forms a cheerful and exhilarating contrast.

The new Yearly Guinea Season Ticket entitles to upwards of 300 Visits, including Flower Shows, about Forty Grand Operatic and Classical Concerts, and Pyrotechnic and other Fêtes.

Monday to Friday, One Shilling.

Saturday, Half a Crown; Children Half Price.

NOTE.—The John T. Ford, which crossed the Atlantic, on view. Armstrong, the only survivor, in attendance.

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January, 1867.

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THE ILLUSTRATED LONDON NEWS.

LONDON: SATURDAY, NOVEMBER 16, 1867.

THE cloud that rested so long upon Mentana has been lifted, and we are now able to see how the day went. It were easy, but unprofitable, to explain why mystery and falsification had their time; and why, for a season, Europe was solemnly and officially informed that the Pontificals had defeated Garibaldi under the eyes of the French. Enough that the truth is now told, and boasted over. The ill-armed and ill-disciplined Garibaldini fought nobly against an enemy whom they might have defeated but for the potent aid of a third force. But while the conflict was doubtful there suddenly came into play the new and terrible weapon with which the French soldiery are armed; and, under the rapid, regular, and deadly fire of the Chassepot rifle, the red-shirts went down like corn before the sickle. It had long been said in military circles that we should one of these days see "a rehearsal of the Chassepot." We have seen it, and the success of the invention is complete. The experiment has been made at the expense of the Italian revolutionists, and it may be that the memory of these martyrs of science will not pass away like the smoke that covered their death-bed. That, however, concerns Italy, to whom Mazzini is now raving to rise against all Principalities and Powers, that liberty may spring from insurrection. Worse counsel could not be given at this hour, even by Mazzini.

Those who prescribe to themselves the duty of justifying every act which has been followed by success are advancing reasons of much plausibility for congratulating all parties, even Garibaldi himself, upon the issue of the fight. We have no such vocation. We desire to see the temporal power of the Pope done away, but we wish to see this result brought about by dignified means, not by violence, and we should demand for his Holiness the consideration and the reverence which are due to an aged Pontiff who is regarded by millions as their spiritual head. Only because this respect was wanting, and because the means which were employed to bring about the fall of the temporal power were those which produced either fierce anger or deep grief in the heart of the Catholic world, and because their success would have promised a reaction at no distant date, can we see any reason for the least satisfaction with recent events. They have brought honour neither to the Governments of France nor of Italy, and they have brought death to hundreds of brave men whose lives should not, like the shield of Saul, have been vilely cast away. There is no one Power or person that has been engaged in the events which culminated at Mentana that appears to us in a position to receive congratulation. Even his Holiness, who is regarded as the chief gainer, and from whose throne the shock has for the hour been averted, may have "gained a loss" in implanting in the Italian heart the ineradicable memory of the day when the Pontiff—we doubt not, with befitting emotion—counted the hours while, almost under the walls of Rome, alien soldiers were slaughtering Italians. In watching a war of sentiment it were absurd to lose sight of what are called sentimental considerations. We might give but a passing regret to a scene like that of Mentana, after the fight, had the fight been one of the ordinary character; but the carnage on that field will ever be associated by the Italians with a struggle for liberties which might have been won but for the foreigners who were invoked by the Holy Father. We repeat, therefore, that whatever justificatory pleas may be set up, there is, now that the whole truth has been revealed, no case for congratulation—not even to Garibaldi in his prison, for he must feel that he led a rash enterprise, and threw away the lives of his followers, knowing, as he did, that the army of France was at hand to reinforce the soldiers of the Holy Chair, and being too experienced a veteran not to be sure that his volunteers must go down in the fray.

Battle is over, the dead are buried, and the Church has honoured her slain, and we may hope has been charitable to the souls whom her ally has sent to their account. The troops of the King of Italy have withdrawn from Papal soil, and all that there might have been of assumed displeasure on the Emperor's side at their having entered the States is forgotten in the lavish eulogy which a later despatch bestows upon the honourable spirit which has dictated the withdrawal. Were an Italian General now to visit the Tuileries he would be received with princely courtesy. On the other hand, the French troops have orders to retire from Rome as soon as they can properly do so, and will for the time concentrate at Civita Vecchia. Premier Menabrea makes an earnest demand for the discontinuance of French intervention. He declares that the Roman question can be settled only by a sincere agreement between the King's Government and the Holy See, that the September Convention has been a failure, that the interference of France was unnecessary and a deplorable fact, and that Italy is ready to defend the soil which holds the tombs of the Apostles.

Not much sign of advance is here. M. Menabrea says little that he might not have said a year ago, and which was not said at that time by his predecessors. The blood shed at Mentana does not as yet seem to have been a libation to peace. We all knew—as we all know—that the hostile attitude of the Holy See towards the sub-Alpine kingdom is the enduring obstacle to the settlement of the question; but what has been done to alter that attitude? Antonelli knows as well as Menabrea what to think about the Garibaldian revolt, and the escapes of the chiefs, and the fast and loose treatment of the insurgents. Garibaldi's voice through the window of the Spezzia prison will not efface the recollection of his words from the Florentine balcony. The Pope forgives nothing, nor, looking at his position from a point of impartial view, can we see that he is called upon to forgive or to make concessions. All was going well, his Holiness will say, when he was broken in upon by the red-shirts, whose burglarious proceedings were winked at by the King. The Pope was fortunate enough to get some good friends, who shot the intruders. But what is there in all this to justify anyone in asking him to pardon his enemies, or to abandon a position which he knows how to keep? That is his question, and we are told that a congress is to try to answer it.

All the wisdom which all the European Powers can supply is to be invited to consider what is to be done with the Pope. Not only are the Catholic kingdoms to send their representatives, but heretic Russia, Protestant England, and Mohammedan Turkey are to be asked what they think the best thing to do with the Holy Chair. The device has been proposed before, for other purposes, and its success has not been signal. In the multitude of counsellors there is safety; but the best interpretation of the words makes the safety belong to the counsellors, who are freed from individual responsibility. But we are assuming assents which have not been given. But two questions might be asked, in order to prevent the Conference, should it take place, from becoming a mere farce. Will the Imperial arbiter of the destinies of Europe give the Powers a guarantee that what seems good to them shall seem good to the Pontiff, and, in the event of the Conference deeming that the interests of the Catholic world and the dignity of his Holiness may be preserved by the secularisation of the Papal States, and the setting the Holy Chair in a sort of holy garden, to which a sacred character shall be assigned by the Pope himself and by the homage of all nations, will the Emperor undertake to enforce the carrying out of that piece of spiritual horticulture? If not, we are all at foolish play.

THE COURT.

THE Queen, with the junior members of the Royal family, continues at Windsor Castle, in the enjoyment of good health.

On Thursday week her Majesty, accompanied by the Princess of Wales, drove out. Sir Stafford Northcote arrived at the castle. Judge Manockjee Cursetjee, of Bombay, also arrived, and was presented to the Queen by Sir Stafford Northcote, upon his departure for India. The Marchioness of Ely and Lord Paget were in attendance. The Princess of Wales and Princess Louisa took a drive. The Prince of Wales and Prince Christian went shooting.

Yesterday week the Queen, accompanied by Princess Christian, drove in the castle grounds. Later in the day her Majesty, accompanied by the Princess of Wales, drove out. The Princess of Wales and Princess Louisa took a drive. The Prince of Wales went hunting with his harriers. The meet took place at Stoke Park, near Slough, the residence of Mr. E. J. Coleman. After the hunt the Prince returned to Stoke Park, and was entertained at luncheon by Mr. and Mrs. Coleman. His Royal Highness afterwards returned to Windsor Castle. The Duke of Cambridge, attended by Colonel the Hon. J. Macdonald, arrived at the castle.

On Saturday last the Queen, accompanied by the Princess of Wales and Princess Louisa, drove out twice. The Prince of Wales, the Duke of Cambridge, and Prince Christian went shooting. This was the twenty-sixth anniversary of the birthday of the Prince of Wales. The event was observed at Windsor with the customary honours. Her Majesty's private band played in the drawing-room after dinner, where the ladies and gentlemen in waiting had the honour of joining the Royal family. The following ladies and gentlemen had the honour of receiving invitations:—Major-General the Hon. A. N., Lady Mary, and Miss Hood; Lieutenant-Colonel and Mrs. Ferguson, Lady Emily Seymour, the Hon. Florence and Miss Georgina Seymour, Mr. and Mrs. Erskine of Cardross, Colonel H. and the Hon. Mrs. Ponsonby; M., Mdme., and Miss Van de Weyer; Mr. Bates Van de Weyer and Mr. Albert Van de Weyer, Colonel and Mrs. G. Gordon, the Rev. R. Duckworth, and Mr. Woodward. The Mayor and Corporation of Windsor gave a dinner at the White Hart Hotel. In the evening the town was illuminated. In the metropolis the birthday of the Prince of Wales was celebrated with the usual rejoicings. The bells of the various churches were rung, and flags floated from the principal public buildings. In the evening the illuminations were very general. The tradesmen connected with his Royal Highness's household dined together at Willis's Rooms. At Sandringham the labourers and dependents upon the Royal demesne, to the number of upwards of 200, were entertained at a dinner, which was given in the Royal mews. The Rev. W. Lake Onslow presided. The festivities were concluded with a bonfire on the heights. At the Royal Hospital, Chelsea, the inmates enjoyed their dinner, customary upon the occasion, of roast beef and plum-pudding.

On Sunday the Prince and Princess of Wales, Prince and Princess Christian, Princess Louisa, Prince Leopold, Princess Beatrice, the Duke of Cambridge, and Princess Henrietta of Schleswig-Holstein attended Divine service in the private chapel of the castle. The Very Rev. the Dean of Ely officiated. The Duke of Cambridge left the castle. The Chancellor of the Exchequer arrived at the castle, and had the honour of dining with her Majesty.

On Monday the Queen, accompanied by the Princess of Wales, drove out. Later in the day her Majesty, accompanied by Princess Louisa, walked in the castle grounds. Lord Stanley arrived at the castle, and had an audience of the Queen; after which her Majesty, accompanied by Princess Louisa, entered the White Drawing-room, when Baron Dujardin, the Belgian Minister, and General Salomons, the Haytian Minister, were presented to the Queen by Lord Stanley, to deliver their credentials.

On Tuesday the Queen, accompanied by the Princess of Wales, drove out. Later in the day her Majesty, accompanied by Princess Christian, drove to Cliefden and honoured the Duchess Dowager of Sutherland with a visit. The Prince of Wales hunted with his harriers. Princess Louisa walked out. The Countess Dowager Spencer and Sir T. M. and the Hon. Lady Biddulph had the honour of dining with the Queen.

On Wednesday her Majesty, accompanied by the Princess of Wales, drove out. Princess Louisa rode in the Home Park. The Prince of Wales, Prince Christian, and Count Gleichen went shooting.

The Prince and Princess of Wales, accompanied by Prince Albert Victor, Prince George, and Princess Louisa of Wales, have left the castle for Sandringham House.

Prince and Princess Christian drove to Hampton Wick on Wednesday week, and were present at the marriage of Miss Emily Maude (daughter of Colonel Maude, C.B.) and Mr. Baird. Their Royal Highnesses afterwards honoured Colonel and Mrs. Maude with their company at the wedding breakfast. The Queen presented the bride with an Indian shawl, and Prince and Princess Christian presented a necklet and earrings of carbuncles and diamonds.

The Countess of Caledon has succeeded the Marchioness of Ely as Lady in Waiting to her Majesty.

His Royal Highness the Duke of Cambridge left town on Monday on a visit to Lord and Lady Londesborough at Grimston.

Prince and Princess Teck returned to Kensington Palace on Tuesday from Germany.

Their Royal Highnesses the Count and Countess of Flanders arrived on Monday at the Clarendon Hotel from Brussels.

There were great festivities at Harewood last week in celebration of the coming of age of Viscount Lascelles, eldest son of the Earl of Harewood.

METROPOLITAN NEWS.

The Princess of Wales has promised to open the new Alexandra Park and Palace at Muswell-hill.

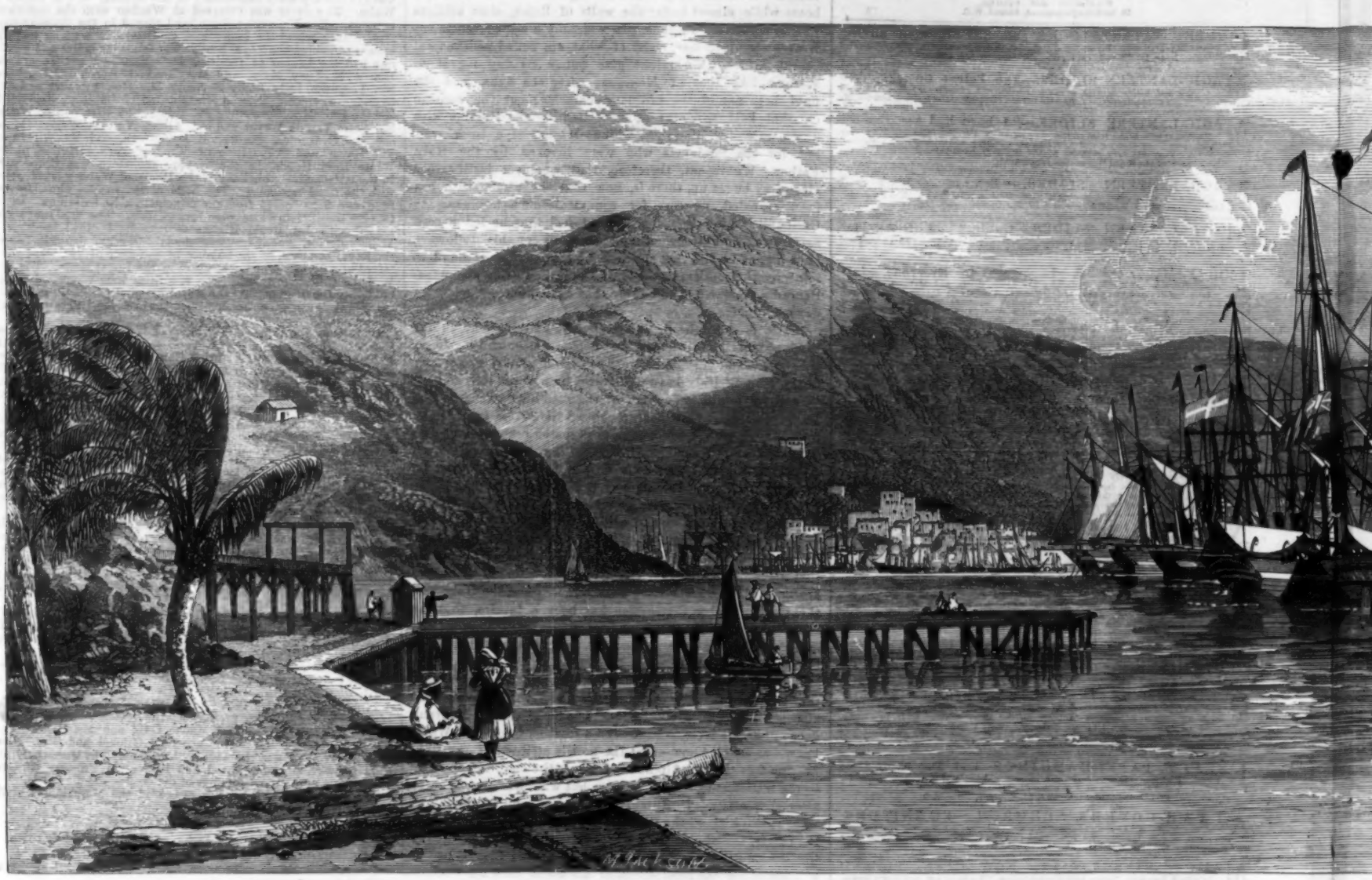
The committee of the Whittington Club have issued a new programme, consisting of balls, concerts, and readings, for the ensuing season. The large ball-room has been re-decorated, from the designs and under the superintendence of Mr. Arthur Allom.

The Earl of Derby and the Chancellor of the Exchequer will give full-dress dinners, on Monday next, to the Ministerial members of both Houses.——Mr. Gladstone has issued a circular to his supporters in the House of Commons urging them to be in their places on Tuesday next, the day fixed for the meeting of Parliament.——It is stated that the Address in reply to the Speech from the Throne will be moved in the House of Lords by Lord Brownlow, and in the Commons by Mr. W. Hart Dyke, one of the members for West Kent.

The funeral of Mr. Edward James, Q.C., M.P., Attorney-General of the palatine of Lancaster, took place, on Saturday last, at the Highgate Cemetery. The chief mourners were the deceased's only son, Lieutenant James, of the 2nd Regiment; his son-in-law, Dr. Steer Riding; his brother, Mr. H. James; and his nephew, Mr. T. H. James, barrister-at-law. Among the friends of the family who also attended were Mr. Aspinall, Q.C., Recorder of Liverpool; Mr. Serjeant Burke; Mr. Clarke, Q.C.; Mr. Temple, and several other members of the Bar. Mr. James did not, as generally stated, die of bronchitis or cold, but of a fever of a typhoid character, with which he was seized while in Paris.

A dinner, in which numerous representatives of Conservative associations from different parts of the kingdom united with the members of the London and Westminster Working Men's Constitutional Association, took place, on Monday, at the Crystal Palace, in commemoration of the passing of the recent Reform Act. Covers were laid for more than 1500 guests, and some time before the dinner hour arrived every seat was occupied. The chair was taken by Mr. R. N. Fowler. There were also present Lord J. Manners; the Right Hon. J. R. Mowbray, M.P.; Mr. Garth, M.P.; Sir C. Russell, M.P.; Colonel Hogg, M.P.; Mr. Sampson S. Lloyd; Colonel Brownlow Knox, M.P.; Mr. C. Cubitt, M.P.; Mr. W. H. Smith, and other gentlemen of note. Pressure of public business prevented the presence of the Chancellor of the Exchequer; and Lord Stanley would have been present but for a summons to Windsor. Lord John Manners and Mr. Mowbray were the principal speakers.——A conference of delegates of the Working Men's Constitutional Associations was held, on Tuesday, at the Freemasons' Tavern—Mr. Gorst, M.P., in the chair. Sixty-six societies from different towns in England were represented. The object was to form rules for a central organisation, with which all the local associations should be connected. It was agreed that the first meeting should be held at Birmingham in the ensuing year, and that the Earl of Dartmouth be requested to accept the office of president for the year.

The Lord Mayor's Show took place last Saturday—a "show," however, no longer, as the big coach, the man in armour, and other grotesque incidents of the pageant have gone the way of a good many more of the old adjuncts of civic state. In Westminster Hall the Recorder introduced the Lord Mayor elect, and the Lord Chief Baron responded in a speech of considerable elaboration, in the course of which he dilated at great length upon the good deeds of the Corporation of London, and wound up by a reference to the hospitalities of the Lord Mayor who has just gone out of office. At the banquet at the Guildhall Mr. Disraeli was the principal speaker, Lord Derby being again confined to his house by an attack of gout. The right hon. gentleman said that, though he could not congratulate his audience on the entire recovery of the country from the effects of the downfall of the great house of Overend, Gurney, and Co., it was some consolation for us to recollect that, so far as the condition of our commerce and the state of our revenues are concerned, England has no reason to be ashamed or abashed. The course of our commerce has been steady and uniform, and the Exchequer is, "without o'erflowing, full." With regard to the state of Europe, the sky is grey, and it wants sunshine, but there are no clouds of a menacing character. In America he believed that justice was now done to the temperate and friendly spirit in which England has considered those questions which were once supposed to be sources of danger; and there was every reason to expect that there would be maintained between England and the United States those feelings of thorough friendship which he trusted would ever subsist between two countries connected by such material interest and by every moral feeling which can unite nations. Lord Stanley replied to the toast of "The House of Commons."



TOWN AND HARBOUR OF ST. THOMAS, WEST INDIES, T

THE HURRICANE AT ST. THOMAS, WEST INDIES.

THE island of St. Thomas, one of the group called the Virgin Isles, with the isles of St. John and Tortola, a few miles apart from it, occupies the most convenient position in the West Indian archipelago for the rendezvous of the mail steam-packets and other vessels plying to and fro between this country and its colonies in that part of the world. It is here that a frightful hurricane, on the 29th ult., caused immense destruction of shipping, besides reducing great part of the town to ruins. The news of this disaster was telegraphed to England, by the Atlantic cable, on Thursday week, and was published in our late edition. It appears that as many as fifty vessels were driven on shore—some on the coast of St. Thomas, and others on the neighbouring islands. Two of the steam-ships belonging to the Royal Mail Steam-packet Company, the Rhone and the Wye, were entirely wrecked, with great loss of life; two others, the Conway and the Derwent, also went ashore, and the Tyne and the Solent were dismasted. These six vessels were the property of the Royal Mail Company. The Rhone, which was one of the finest and fastest vessels of the company's fleet, was a screw-steamer of 2500 tons and 500-horse power, and employed on the main line across the Atlantic. She left Southampton, under command of Captain T. Woolley, with the outward mails of the 2nd ult., and arrived out at St. Thomas on the 14th. Her contract time of leaving again with the homeward mails and passengers was the 29th, and she was expected at Southampton about the 12th inst. The five other steamers named were employed in the intercolonial service.

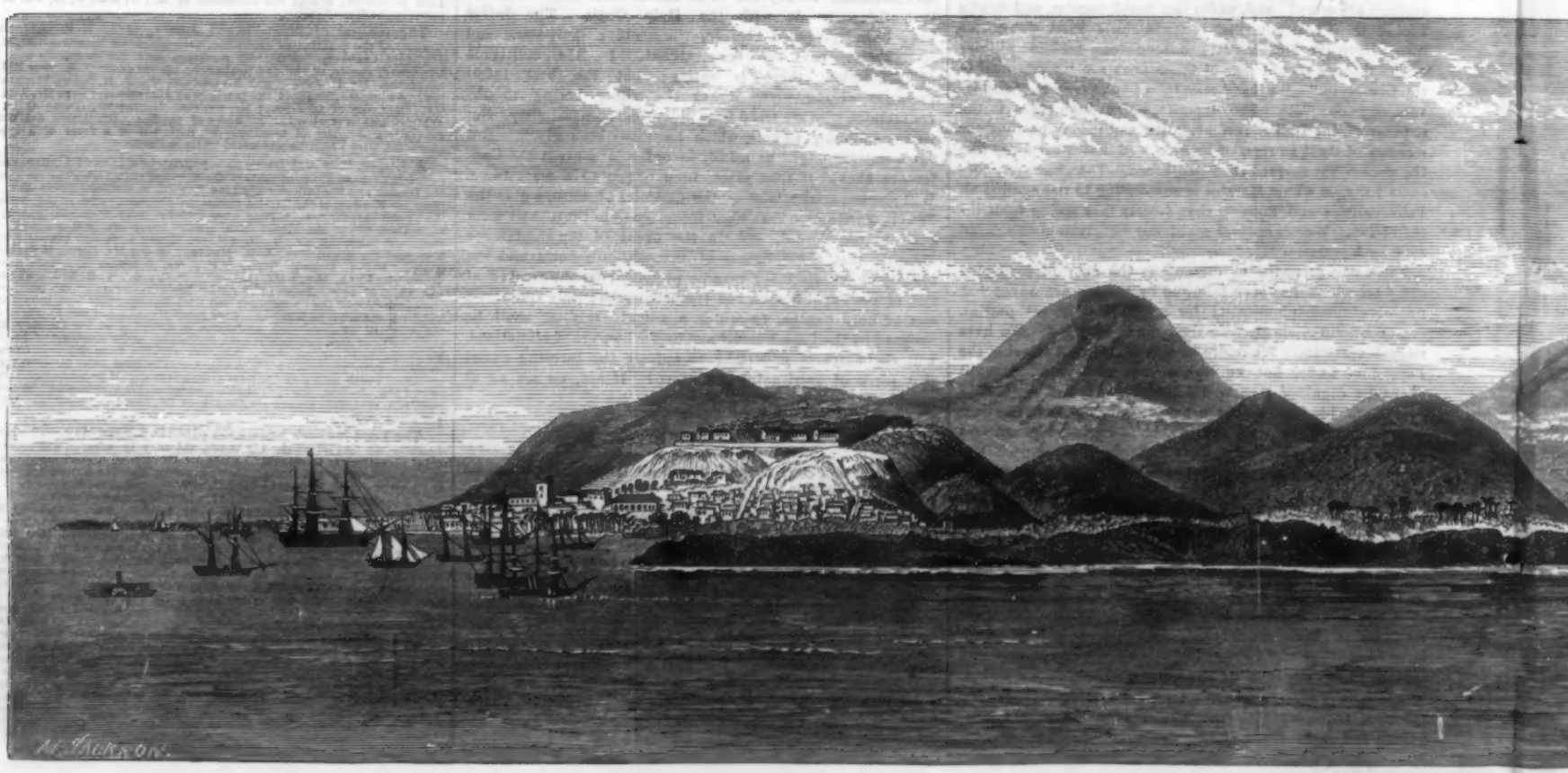
It appears that the Rhone was lying in the anchorage of Tortola passage, off the island of St. Peter, distant about twenty miles from St. Thomas, as is customary when the yellow fever is prevalent, and that she had her steam up in case of being compelled to "run in" by a sudden hurricane, but so sudden and violent was the storm that all the efforts of those on board to get her away were futile, and she was driven upon the coral reefs of St. Peter's Island. It is feared that all on board the Rhone perished, including the post-office clerk and sorter, from St. Martin's-le-Grand, who were in charge of the mails. The Wye was wrecked on Buck Island, the Conway went ashore on the isle of Tortola, and the Derwent at St. Thomas. The West Indian and Pacific steam-ship Colombian is also lost.

The destruction of life and property in the island is very great. The Royal Mail steam-packet Douro, a sister ship to the Rhone, was to leave St. Thomas on the 4th inst., and is now expected at Southampton.

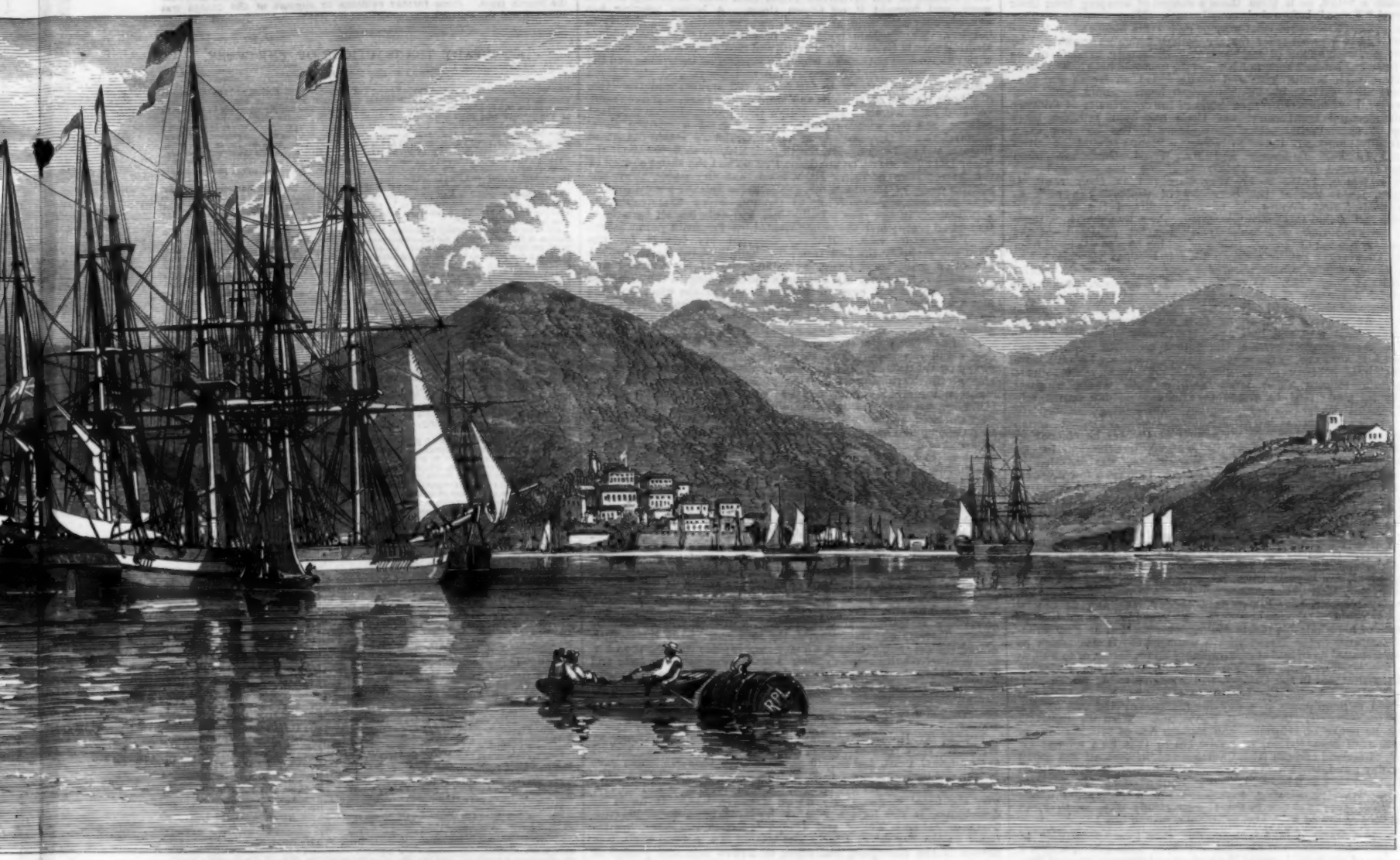
Our Engraving, from a sketch taken a year or two since, represents the ordinary aspect of the town and port.

SIERRA LEONE.

THE deliberations of a Parliamentary Committee on the administrative condition of the British settlements on the west coast of Africa have



SIERRA LEONE, WEST

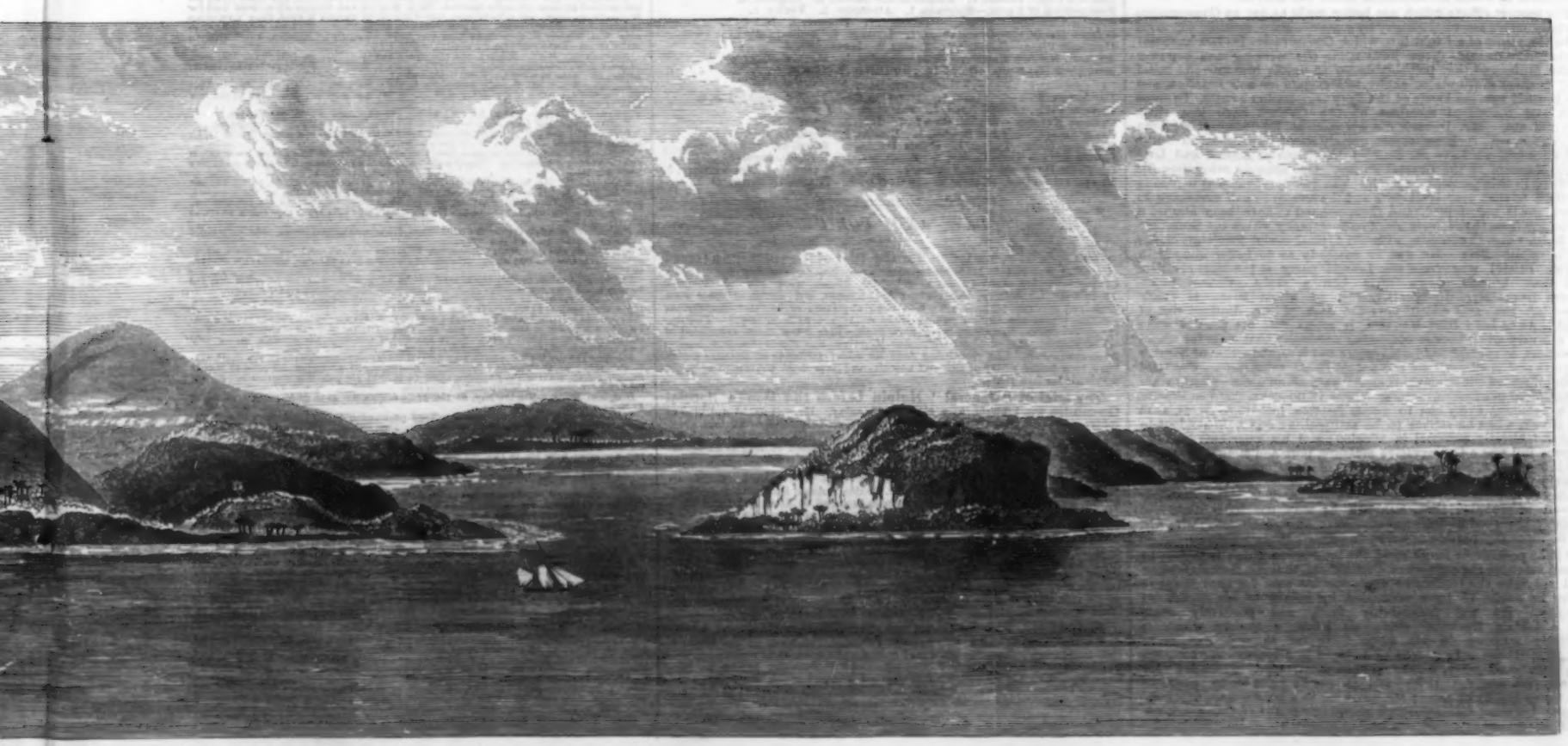


INDIES, THE SCENE OF THE RECENT DESTRUCTIVE HURRICANE.

board the lately directed public attention to Sierra Leone. We present a view of
from S. that place, taken from a ship lying in front of the town. The British
Wye was territory here consists of a peninsular strip of land, about twenty miles
f Torton, long and twelve miles broad, which is situated between the river Sierra
team-ship Leone and the sea. It is on the coast of Senegambia, in lat. 8 deg. 30 min.
north of the equator. The central portion of this district is mountainous and
eat. The the soil barren, but there is a belt of rich land along the coast. Freetown,
s to leave the capital, where the Governor and his council reside, has a population of
on. 50,000 persons, mostly of the negro race. The export trade of Sierra
esents the Leone consists of teak and other timber, palm oil, hides, ginger,
ivory, rice, and pepper; but it has been kept by the British Govern-
ment of late years not for the sake of commerce, but chiefly as a
nistrative station for the naval squadron employed to suppress the slave trade.
rica have The cost of maintaining this West African settlement alone, in a most
pestilential climate, has amounted to not less than ten millions sterling
since 1787.

INDIAN RELIEFS AT SUEZ.

THE new line of military transport service lately established between England and India, by the Alexandria and Suez route, has been noticed by us on several occasions, and we have given some Illustrations of the five magnificent steam-ships—the Serapis, Crocodile, Euphrates, Jumna, and Malabar—built for this purpose. Two of these ships are to ply between Southampton and Alexandria, and three between Suez and Bombay or Calcutta, enabling the troops relieved in India to come home and the reliefs to arrive in India within a month or six weeks, instead of undergoing the long voyage of three or four months round the Cape of Good Hope. We have now engraved a sketch, by our correspondent in Egypt, representing the arrival of the railway train at Suez with the second battalion of the 60th Rifles, who had been brought from England to Alexandria in the Crocodile, and were passed on to Suez in the first days of October. The journey from Alexandria to Suez is performed in ten hours, and usually in the night to avoid the heat. The troops, while travelling, are in heavy marching order, with their rifles; they carry their rations with them; and it is satisfactory to hear that their behaviour, in this trip over the isthmus, has invariably been quiet and steady. The Government of the Viceroy of Egypt, to whom the railway belongs, has spared no pains to provide every needful accommodation, and has caused fifty carriages to be built for this traffic. They were constructed in Prussia, being of the same pattern as those used for the conveyance of the Prussian army; each carriage holds fifty men, having a door at each end, and the carriages are made so accessible from one another that an officer may pass through the entire length of the train while in motion. Some of the carriages are furnished, also, with reserved places for the non-commissioned officers who are to overlook the soldiers while on the road. Having reached Suez, the men of the 60th Rifles were regaled each with a good cup of coffee, and embarked on board the Euphrates for Calcutta.



ONE, WEST COAST OF AFRICA.

MEMBERS OUT OF PARLIAMENT.

Some representatives of the people will, perhaps, find the winter Session a relief, as it gives them a chance of escaping from their annual "Kotoo" before their constituents. Many a minor member will rejoice to reassume what may be called his independent lobby-strut, and to give an order for the gallery which he knows will be of no use, with an air of condescending generosity, to some of the very persons before whom, in his borough, he would have had to stand bowing, with bended knee and breath bated, so far as was consistent with getting his humble speech heard. Some gentlemen, however, have not availed themselves of the opportunity of shirking their electoral anniversary, and there has been rather a large crop of extra-Parliamentary deliverances in the last few days. Naturally, amongst those to whom attention would be given would be Earl Grosvenor and Mr. W. H. Gladstone when they appeared in public at Chester; but the occasion was one in which, so to speak, they were not on their responsibilities, for it was at the ceremony of dedicating a park to the use of that famous old town, the gift of the Marquis of Westminster, that these members spoke. As it was, therefore, there was no exposition—if so unlikely a thing was expected—of the present condition of the little party of which he was the head from Lord Grosvenor; but he confined himself to some amiable, not to say filial, remarks, which were of course in place, while politics would not have been. As to Mr. W. H. Gladstone, he has the doubtful advantage of being the subject of great expectations; for it is supposed that he will follow in his father's footsteps as a public man. At present, however, he does not seem to develop any tendency that way, and he is, perhaps, wisely playing a waiting game. As a speaker, even at the dullest hour, the House as yet knows him not; and, so far as opinions can be gathered from a mere inspection of his outward man, one would say that he seems to have a certain solidity about him; and, on the whole, a guess might be made that he would eventuate some day into a safe and useful Under-Secretary, unless, indeed, there is beneath his present aspect a latent store of that *vis vivida* which characterises his father. In his speech at Chester he showed in some degree that he is not wholly without imagination, for he stated that it appeared that Lord Westminster was regarded in Cheshire as little less than a patron saint. Perhaps a few observations, evidently born of his recent tour in Ireland, may be taken as suggestive that he will, having a basis of personal knowledge on the subject, break ground as a member on the Irish questions which are imminent.

It will hardly be disputed that in the last Session Mr. Childers held the post of deputy leader of the Opposition. His assiduity was ceaseless, and his official knowledge was shown to be astonishingly great, far beyond what might have been expected in an ordinary way after two or three years' service in public departments. In many respects, Mr. Childers is a coming man, and no Liberal Ministry could be taken to be complete without him, and not the less because of his admirable tact in dealing with the House. Few financial Secretaries to the Treasury have managed the House, which he was often called on to lead at extraordinary hours, better, or so well, as he. Ere long nothing less than the presidency of the Board of Trade, with a seat in the Cabinet, will be equal to his pretensions. Almost alone amongst the Liberal ex-Ministers, Mr. Childers has delivered a programme of policy for his party; and this he did, almost exhaustively, recently at Pontefract. With no uncertain sound, he spoke of reforming the Reform Act of last Session; of education, of organisation, of public offices (has he a scheme for this?), of Ireland and the Irish Church; and, in fact, all the topics of the day; and, what perhaps is creditable to him, he still believes in Mr. Gladstone as a leader, both in and out of office. To an essentially working, painstaking, cognoscent, and fine-tempered public man, who is sure to get on in the regular steady way, all that can be said is—to use an Irish phrase—more power to him!

It were a shame if in this record one were to omit mention of the superb deliverances of Sir John Walsh, in Radnorshire, who is a link—one of the last—between the modern and the pre-reformed Parliaments. It is not Sir John's fault if it is not remembered that he was an active opponent of the bill of 1832, and moved an amendment which was, as he supposes, nearly fatal to that measure; and, with that memory, one cannot but be amused to see the way in which this honourable and rather grandiloquent member—who retains that style of oratory which is supposed to be of the Pitt and Fox period, and of which the latest but one Marquis of Lansdowne was the ultimate complete professor—proved to his own satisfaction that the new Reform Act was all that his soul could desire. This is remarkable testimony to the success of that education of his party of which Mr. Disraeli boasts; for of all his scholars one would have thought Sir John Walsh the least teachable—for reasons sufficiently obvious, though not connected with his temperament, which is genial enough. But Sir John would seem to be absolutely outdone by Sir Lawrence Palk, who, not denying that he is a convert to the doctrine of Conservative-Radicalism, as illustrated by household suffrage, with characteristic bluffness protests against having been educated by Mr. Disraeli at (this is a joke) Dotheboys Hall, but that he has been long undergoing a process of self-instruction, which, curiously enough, led him up at exactly the same moment to the conclusion at which his ostensible leader had arrived.

The earnest efforts which are being made to get up Conservative working-men's associations may by some cynical persons be supposed to be the result of a fright into which Conservative leaders have got at their own doings. They have made the working man a power in the State, and they palpably desire to cajole him into the belief that in sheer gratitude he ought to abnegate his new function, and put himself into the hands of the Tory registration agents. To some such end individual members of the Cabinet have lent their personal aid. Mr. Disraeli did his part at Edinburgh; Sir John Pakington, with such an object, greatly dared to reappear in York; and later still we have Sir Stafford Northcote at Bristol, and Lord John Manners at the Crystal Palace. One scarcely recognises Sir Stafford in this particular speech. The jubilant tone was in strong contrast to that dead-level style and that voice in half mourning to which one is accustomed, and there seemed to have been almost a departure from that solemn air of respectability which the Secretary for India wears in common with the typical model first-class clerks in the public offices. He was so unsteady as to suffer himself to declare Bristol won from the Liberal party at the next election, and thus brought down upon him a reply in the newspapers from Mr. Henry Berkeley, in whom there is much blood left yet, and which puts the case of Sir Stafford out of court. As to Lord John Manners, it seems that his peculiar style did not vary when he was addressing nominally that class for whose happiness, as exemplified in Maypoles and a reproduction of Strutt's "Sports and Pastimes," he was ardent in his salad days. For Lord John presented the anomalous appearance of an amiable and rather weak-voiced gentleman, cursing (there is no other word to express one's meaning) every one to whom he was speaking. Here, as in the House, when he strives to be satirical, he was only strident in tone and bitterly personal in allusion; and his assertions that the Reform Bill was a Conservative measure, pure and simple in motive and in execution, sounded like a series of maledictory asseverations. However, as most likely in the country, as is the case in the House, nobody minds—the feeling being that his bark is worse than his bite—it is probable that, although he may not have done the Ministry any good as their representative at Sydenham-hill, he will not do them any particular harm.

If it be possible to laugh away the impression which is said to be abroad amongst the electors of Nottingham, that Mr. Bernal Osborne need not take the trouble to apply for his seat for that borough again, he ought to have succeeded by means of his speech on Tuesday. He was indubitably droll, and positively there was a certain freshness about his jokes, a quality which is generally wanting to his quips. So far as one can make out, Mr. Osborne is in a state of independent opposition; he owes allegiance to no party, and to no particular leader. There are very obvious reasons for this; and it seems more than probable that for an indefinite period Mr. Osborne, as a public man, will continue to be, what Sydney Smith sneeringly called Canning, a joker of jokes.

NATIONAL SPORTS.

The backers of the favourites raised their heads at Liverpool once more, and brought it off fifteen times. A better meeting has scarcely ever been held at Aintree, and the weather was strictly in keeping. Mr. Topham must now be convinced that the summer meeting should be decently interred, and that he should rest content with the sterling patronage which he receives at the spring and the fall of the year. Lord Westmoreland and Kenyon, in the "green with white braid," threw in for four small stakes; and the Hon. Stanhope Hawke, of Marquis and Marchioness fame, was once more gazetted as a winner. The Autumn Cup produced some excellent betting, and the winning stable made as great a mistake about Mandrake's and Corporal's form as Mr. Graham's stable did about Regalia and Caithness. Mr. Smith took £10,000 to £1000 about the latter from his owner, on condition that he had the entire control of the horse. The borrower knew more than the stable about the relative form of the chestnuts, as Caithness finished a good fourth, after experiencing—according to Cannon—every conceivable disappointment in the race. Dalby, 8st., was only beaten by a head for second place; and the public trusted the favourite yellow jacket on Primate in vain. Honesty deceived his friends for the third and probably the last time; but Knight of the Garter proved himself a really good horse, by giving the winner a stone and running him to a neck. Mr. Topham's handicapping in the Whitfield Nursery Stakes was even finer than it was in the cup; and the four first finished within half a length. Evelina, the winner, is undoubtedly by Hubert, and not by Kettledrum, if the eye be any guide.

Neither "the upper ten" nor the leading bookmakers seemed to care about Shrewsbury joys this year. There was some spirited racing on the first day, but the Queen's Plate was in keeping with a race at the York August meeting of 1850, which occupied about eighteen minutes! Here neither Mandrake (Cameron), Moose (Cannon), nor Christmas Carol (Challoner) would force the pace; so they cantered, and walked, and trotted two miles, and then the three Cs pulled up and had a little amicable conversation. When their topics were exhausted Cameron set his chestnut a-going, and Moose could never quite reach him. As for the great "flake second" to Gladiateur, he was "a bad third."

The Champagne Stakes entry (57) is, we believe, the best on record. The respectable listers are looking anxiously forward to the reversal or confirmation of the Doncaster decision in the Queen's Bench, and have opened a commission exchange, or junior Tattersalls', in Faringdon-road, instead of doing the dreary peripatetic business. Turf statists are so eager to be at their winter accounts that, although there are two meetings still on the list, they proclaim Fordham far ahead, with 142 winning mounts; and Kenyon and Butler second, at a respectful distance. Old Saccharometer has retired in his seventh season, and has been purchased for 1200 gs. by his breeder, Mr. Eyke, who owned his sire, Sweetmeat. The Marquis of Hastings's stud of thirty-one in training and twenty-one yearlings will be sold by Messrs. Tattersall, at Danebury, on the 23rd inst. Lady Elizabeth is among the lots; but, of course, a heavy reserve price will be put on her. Strafford retires this season; Blair Athol's subscription is full; and the Highland Society have determined to give £50 as a thoroughbred sire prize when they meet next year at Aberdeen. Five of Sir Joseph Hawley's yearlings, three colts and two fillies (one of them an own sister to Rosicrucian), have gone up to the Baronet's private trainer.

Four of Mr. Hobson's yearlings were brought to the hammer on Monday. They realised 765 gs., considerably less than a third of their original price, and only 5 gs. more than that gentleman gave for the one by Newminster from Entremet.

The sculler's race for £100 a side, between W. Sadler and Kilsby, over the usual course, came off on Tuesday last. It needs no description, as the former won as he liked by a dozen lengths. The race between Kelley and Joseph Sadler excites increasing interest as the day draws near. The betting is at present slightly in favour of the champion, but offers of five to four find plenty of takers.

SHREWSBURY MEETING.—Monday.

Abbey Handicap.—Adamanthea, 1. Miss Alice, 2. Brown Tommy, 3.
Cleveland Plate.—Python, 1. Sir Oliver, 2. Deceiver, 3.
Racing Plate.—L'Africaine, 1. Rosa Nena, 2. How-d'ye-do, 3.
Stewards' Cup.—Scipio, 1. Cromwell, 2. Lady Pam, 3.
Queen's Plate.—Mandrake, 1. Moose, 2. Christmas Carol, 3.
Carnival Nursery Handicap.—Paganini, 1. Beauty, 2. Lictor, 3.
Foregate Stakes.—Bounceaway, 1. Sour Grapes, 2.
Nursery Handicap.—Retirement, 1. Pocket Hercules, 2. Peace, 3.
Wynnstay Welter Handicap.—Wild Moor, 1. Elegance, 2. Belmont, 3.

TUESDAY.

Wrekin Stakes.—Liddington, 1. Brenda, 2. Adamanthea, 3.
Battlefield Handicap.—Python, 1. Grey Stocking, 2. Hopvine, 3.
Enville Plate.—Parma, 1. Huntsman, 2. Billet, 3.
Shrewsbury Cup.—Tynedale, 1. Fairwind, 2. Mousley, 3.
Borough Members' Plate.—Pocket Hercules, 1. Cheddington, 2. Rob Roy, 3.
Handicap Sweepstakes.—Parma, 1. Ladylike f, 2.
Shorts Handicap.—Epigram, 1. Lupus, 2. Footlight, 3.
County Members' Plate.—Purveyor, 1. Queen of Trumps, 2. Lenore, 3.

WEDNESDAY.

Handicap Sweepstake.—Rob Roy, 1. Lupus, 2. Miss Alice, 3.
Acton Burnel Stakes.—Herennianus, 1. Brenda, 2. Cheddington, 3.
Shobdon Cup.—Lconie, 1. Knight of the Garter, 2. Regalia, 3.
Sweepstakes of 3 sovs.—Epigram, 1. Albatross, 2. Verity, 3.
Copeland Nursery Handicap.—Chivalry, 1. Timaru, 2. Lictor, 3.
Column Handicap.—Grand Cross, 1. Lozenge, 2. Captain Kidd, 3.
Handicap Plate.—Hopvine, 1. Lenore, 2. Huntsman, 3.
Anglesey Nursery Handicap Plate.—Spitfire, 1. Maid of Burghley, 2.
Monkmoor Handicap.—Dulcet, 1. Sir Oliver, 2. Deceiver, 3.

THURSDAY.

Hawkstone Welter.—Vixen, 1. Three per Cent, 2. Duc Bourgogne, 3.
Forester Plate.—Grand Duke, 1. Fairwind, 2. Lenore, 3.
Caldecot Nursery.—English Rose f., 1. Lily, 2. Picnic, 3.
Graby Stakes.—King of Spades, 1. Brenda, 2. Mochrie, 3.
Handicap Plate.—Parma, 1. Prima Donna, 2. Sycee, 3.
Hurdle Race.—Marie Louise, 1. Monitress, 2. Lord Waldegrave, 3.
Longleate Handicap.—Liddington, 1. King of Spades, 2. Thermometer, 3.
Newport Gold Cup.—Knight of the Garter, 1. Viridis, 2. Corporal, 3.

LAW AND POLICE.

The special commission for the trial of the persons accused of murder and riot in Manchester came to a close on Tuesday night, after having occupied eighteen days, of which fifteen were days of business. There were, we believe, thirty-eight indictments, but eleven of these were preferred against persons who had been acquitted of heavier charges, or against whom the Crown subsequently entered a *nolle prosequi*. Twenty-seven prisoners, therefore, were arraigned. Five have been convicted of wilful murder, one of whom—Thomas Maguire—has received a free pardon from the Crown. The remaining four lie under sentence of death. Seven have been found guilty of riot and assault, and have been sentenced to penal servitude for five years.

The trial of "General" Halpin before the Dublin Special Commission was brought to a close on Tuesday. He was found guilty, but sentence was not passed. In the case of "Captain" Costello, tried, last week, before the Commission for treason-felony, the jury, after being locked up five hours, were discharged, there being no likelihood of their coming to an agreement. On Wednesday he was put on his trial a second time.

The Bail Court was occupied several days last week in hearing an action brought against Mr. Beales, Colonel Dickson, and others, by Mr. Darby, to recover £288 for expenses incurred by him, and for £300, a year's salary, which he alleged to be due to him as secretary to the new Reform Club, of which the defendants formed the provisional committee. The defendants denied the agreement. They alleged that they were induced to enter into it by the fraud of the plaintiff; that the club was not established; that the plaintiff had fraudulently represented that 200 persons had joined the club; and it also charged misconduct on the part of the plaintiff. On Saturday the case ended with a verdict for Darby, of £150 (or half a year's salary), and £215 for expenses incurred by him in establishing the club.

In 1864 Mr. Thomas Chambers, the Common Serjeant, tried a shopkeeper of Whitechapel, named Verinder, for libel, at the Central Criminal Court. Verinder was found guilty, and sentenced to imprisonment. Since his release he has not only addressed threatening letters to Mr. Chambers, but has grossly libelled that gentleman, among other ways, by posting abusive placards outside his shop window. He refused to desist from this course, and therefore Mr. Chambers has prosecuted him. Verinder was brought up at the Worship-street Police Court on Tuesday, and, after some evidence had been taken, was remanded.

Richard Morris, the East-End licensed victualler who stands charged with having attempted to set fire to the public-house of which he was landlord, was brought up on Tuesday at the Thames Police Court for the fourth time. Some further evidence in support of the charge was adduced, and the accused was committed for trial.

MONETARY TRANSACTIONS OF THE WEEK.

(From our City Correspondent.)

Notwithstanding that the Paris Bourse has been far from active, and that the actual purchases of stock have been only moderate, the Consol Market has been very firm this week, and a steady advance has been quoted in prices. The supply of stock in the hands of the jobbers will shortly be reduced by the large purchases about to be effected on account of the Sinking Fund. On Monday Consols, for Money, opened at 94⅝; they have since been done at 94⅝; the latest Account price was 93⅝ ex div. Reduced and New Three per Cents have advanced to 93 to 93⅛; and Exchequer Bills to 3s. to 1s. prem. Bank Stock has continued firm, at 245 to 247. Most Indian Securities have ruled steady, although the transactions in them have been only moderate:—India Stock may be quoted at 221 to 223; Ditto Five per Cents, 114½ to 115½; India Bonds, 55s. to 65s. prem.; Rupee Paper, 103½ to 104½, and 108½ to 109½.

We have no change to notice in the value of money in the Discount Market. The supply of unemployed capital is still greatly in excess of the demand. In Lombard-street the best short paper is discounted at 1½ to 1⅝ per cent. The quotations for six months' bills are 1⅝ to 2 per cent. The joint-stock banks and discount houses are still giving only 1 per cent for money at "call."

About an average quantity of bullion has come to hand, chiefly from Australia, but there is still some inquiry for export purposes to pay for foreign corn. The demand will, in all probability, continue to exist for some time, as an immense quantity of grain afloat from the Black Sea ports, as well as from Australia and Chili. Advices from New York bring a further decline in the value of breadstuffs. In October the shipments of wheat from that port reached 1,600,000 bushels; of flour 100,000 barrels. These heavy exports, at a time when cotton is coming forward freely, must have the effect of reducing the shipments of gold from America. Our own corn trade has become heavy and drooping; nevertheless it is generally admitted that we still require a very large supply of foreign food to meet the consumption.

On the Paris Bourse the Three per Cent Rentes have been done at 68f. 22c., being a slight advance. At New York, on the 12th inst., the price of gold was 139¾, and the sterling exchanges on London, 109¼. The latter quotation shows very little profit on gold shipments to England.

At an adjourned meeting of the holders of Greek Bonds, the terms proposed by the Greek Government for the settlement of the debt were conditionally agreed to. The bondholders require the hypothecation of certain securities, and an increase in the Sinking Fund, at the end of five years, from £2000 to £30,000 per annum.

The foreign exchanges have continued quiet. At Paris the price of money remains at 1½ to 2½; at Vienna, 4; at Berlin, 5½; at Amsterdam, 3½; at Hamburg, 5; and at St. Petersburg, 9 per cent, or 2 per cent above the Bank rate.

It is stated that the Nova Scotia and New Brunswick Railway Company will shortly become borrowers in this country. The capital is £600,000, upon which there will be an Imperial guarantee.

An ad-interim dividend of 10 per cent per annum has been declared by the directors of the Trust and Agency Company of Australasia. The Honduras Government Railway Loan has been quoted at 2 to 3½ premium.

The steamer arrived at St. Nazaire has brought £240,000, partly on English account.

The market for Foreign Bonds has been firmer, and in many instances an advance has been established in prices:—Spanish Passives and New Three per Cents have been in active request, and the quotations show an advance in values. Danubian Land Improved, 1 per cent; Portuguese and Turkish of 1865, ½; and Mexican ¼. On the other hand a fall of ½ per cent has taken place in Greek Bonds, and ¼ per cent in the Guatemala and Egyptian Railway Debentures have declined ½; the Viceroy of Egypt's Loan, ½; and Italian of 1861, ¼ per cent. The following are the leading quotations of the week:—Brazilian, 1865, 75; Chilian Six per Cents, 100; Ditto Scrip, 1 prem.; Danubian, 46; Egyptian, 1864, 64½; Ditto Debentures, 90½; Greek, 14½; Italian, 1861, 65½; Russian, 1850, 85½; Ditto, 1864, 87½, 88; Spanish, New Deferred, 22; Ditto Passive, 9¾; Ditto Certificates, 17½; Turkish, 1862, 61; Ditto, 1865, 38½; Mexican, 14½ to 15½.

American Securities have been somewhat heavy, and prices have had a drooping tendency. We quote United States 5-20 Bonds, 70½; Erie Railway Shares, 47 to 48; Illinois Central, 87 to 88; Atlantic and Great Western Debentures, 21 to 23; and Consolidated Mortgage Bonds, 19 to 20.

But few transactions have been recorded in Colonial Government Securities, but the quotations have been firmly supported. Canadian of January and July have been done at an advance of ½ per cent, the price being 103½; Ceylon Six per Cents, 1878-82, have marked 111; New Zealand Five per Cents, 94½; South Australian Six per Cents, 107; Victoria Six per Cents, January and July, 111½; Ditto, April and October, 110½.

Joint-stock Bank Shares have been rather pressed for sale, and a decline of £2 has taken place in London and County, London Joint-stock, and in Union of Ireland; and of 10s. in London and Westminster and Union of London, which are now quoted at 71½ to 72 and 36 to 36½ respectively.

In the Miscellaneous Market financial shares have been neglected. International Financial range from 3½ to 2½ dis.; London, 2½ to 3½ dis.; General Credit 2½ to 2 dis.; and Credit Foncier, 6½ to 6½ dis. Atlantic Telegraph Shares are firm, at 34 to 35; the Eight per Cent Preference Stock being 76½; Anglo American Telegraph, 18½. Gas and Water Companies' shares commanded little attention, but values have been firmly supported:—Peninsular and Oriental Steam Steam have sold at 51; Royal Mail Steam, 66 67; Telegraph Construction, 16½; London General Omnibus, 2; National Discount, 11½; East India Irrigation, 1½; and Viceroy of Egypt's Mortgage, 72½.

Railway Shares have ruled extremely heavy, and an almost general fall has taken place in the quotations. Caledonian Stock has been pressed for sale owing to the late report issued by the directors.

The Victoria Station and Pimlico Railway Company offer to convert their outstanding debentures, which rank as a first mortgage, into a four-and-a-half per cent perpetual debenture stock, or to pay them off in anticipation of their due date.

The traffic return of the Great Northern Railway for last week shows an increase of £4036 over last year; the Midland, an increase of £4131; the Great Eastern, of £580; the Great Western, £2606; and the London and North-Western, £5064.

Ordinary Stocks and Shares.—Bristol and Exeter, 87; Caledonian, 80; Great Eastern, 30½; Great Northern, 103; Ditto, A, 111½; Ditto, B, 124; Great Western, 63½; Lancashire and Yorkshire, 121½; London and North-Western, 113½; London and South-Western, 79; Manchester, Sheffield, and Lincoln, 47½; Metropolitan, 120½; Midland, 116½; North-Eastern—Berwick, 99½; Ditto, South-Eastern, 90; York, 90; South-Eastern, 59½.

British Possessions.—Bombay, Baroda, &c., 163½; East Indian, 110½; Great Western of Canada, 16½; Madras, 104; Scinde—Delhi, 105½.

The return of the Bank of England shows the following results when compared with the previous week:—

A decrease of circulation of ..	£470,802	A decrease of other securities of ..	£185,956
A decrease of public deposits of	251,730	A decrease of bullion of	94,491
A decrease of other deposits of ..	55,313	An increase of rest of	5,434
A decrease of Governt. securities of	572,000	An increase of reserve of	342,774

The circulation, including Bank Post Bills, is £24,783,888; public deposits amount to £5,146,163; private deposits to £16,691,873. The securities held represent £20,49,819; and the stock of bullion is £23,238,626. The rest stands at £3,008,949.

THE MARKETS.

Corn Exchange (Monday).—There was a moderate show of samples of wheat from Essex and Kent on the stands to-day, of fair average quality. The demand for both red and white parcels was very inactive, and prices gave way fully 1s. per quarter. In foreign wheat a limited business was concluded, at a similar decline in the quotations. Barley, although comparatively scarce, was little inquired for, and a reduction of 1s. per quarter was submitted to. The malt trade was very dull, at fully 1s. less money. The arrivals of oats were extensive, and the condition of the samples was inferior; old corn were down 6d. to 1s., and new 1s. to 1s. 6d., per quarter. Beans and peas commanded little attention, but late rates were supported. No change took place in the value of town-made flour, but country and other secondary descriptions were rather easier to purchase.

Wednesday.—The attendance at this morning's market was thin, and trade in all descriptions of produce extremely inactive. Both English and foreign wheat were held for Monday's currency, but millers were not disposed to operate beyond their immediate requirements. Barley, beans, and peas were dull, at late rates. Malt was very difficult to sell. The supplies of flour have been very large, especially of Russian, which sold on easier terms. Town made flour was unaltered in value.

Arrivals this Week.—English and Scotch: Wheat, 360; barley, 160; malt, 150; oats, 10 qrs.; flour, 600 sacks. Irish: Barley, 19; oats, 980 qrs. Foreign: Wheat, 11,760; barley, 320; oats, 15,160 qrs.; flour, 11,650 sacks.

English.—Wheat, 44s. to 73s.; barley, 30s. to 43s.; malt, 50s. to 71s.; oats, 23s. to 31s.; rye, 43s. to 45s.; beans, 41s. to 56s.; peas, 43s. to 59s. per quarter; flour, 42s. to 64s. per sack of 280lb.

Averages of Grain.—Wheat, 70s. 1d.; barley, 42s. 4d.; oats, 25s. 1d. per quarter.

English Grain Sold Last Week.—Wheat, 67,671; barley, 73,703; oats, 7230 quarters.

Bread.—The prices of fine wheaten bread in the metropolis are from 10d. to 10½d.; and of household ditto, 7½d. to 9½d. per 4lb. loaf.

Seeds.—Both linseed and rapeseed have been very dull, and to effect sales lower prices must have been submitted to. Canary and hemp seed were unaltered. In clover seeds very little was doing.

White turnip, 15s. to 18s.; swede, 16s. to 19s.; winter tares, 6s. 6d. to 7s. 6d. per bushel; canary, 60s. to 70s.; ryegrass, 28s. to 34s.; hempseed, 45s. to 48s.; linseed, sowing, 70s. to 72s.; ditto crushing, 66s. to 68s.; rapeseed, 52s. to 56s. per quarter; linseed cakes, English, £10 10s. to £11 10s.; foreign, £9 to £11 10s.; rape cakes, £5 10s. to £6 10s. per ton.

Tea.—There is a fair inquiry for most descriptions, on previous terms. The arrivals of new teas continue on a fair average scale.

Sugar.—Both raw and refined sugars are in active demand, and prices show a slight advance over those of last week. The stock in London is 84,930 tons, against 106,289 tons in 1866.

Coffee.—Full values continue to be realised for all good descriptions of coffee, but the inquiry is not very active. The stock is 16,438 tons, against 15,566 tons last year.

Rice.—The market is quiet, but holders are firm in demanding late rates. Stock 13,314 tons, against 21,956 tons in 1866.

Provisions.—Irish butter has ruled inactive, and prices have been barely maintained. Friesland is quoted at 110s. to 120s. per cwt. Only a limited quantity of cheese is on offer, and prices are consequently firm. Bacon has sold at late rates, the arrivals having only been moderate. Hamburg and Danish are quoted at 53s. to 56s. landed.

Spirits.—The market for rum is very firm, at fully late rates. Owing to the short production this year, the Vineyard Proprietors' Company has advanced the price of brandy 10d. per gallon, making the quotation equal to 8s. 10d. per gallon in hogsheads. An advance may consequently be expected on this side.

Hay and Straw.—Meadow hay, £3 15s. to £4 4s.; clover, £3 to £5 5s.; straw, £1 10s. to £1 16s. per load.

Wool.—The public sales of colonial wool are progressing slowly, and there is a downward tendency in the values of most descriptions, especially of Cape, with which the market is excessively supplied.

Potatoes.—There are large quantities of potatoes on offer, and there is a good trade at prices varying from 90s. to 130s. per ton.

Hops.—The markets, both at home and abroad, have ruled extremely inactive, and prices tend in favour of buyers. Best Kent pockets may be quoted at £7 10s. to £11 10s. per cwt.

Oils.—Linseed oil, on the spot, has declined to £35 5s.; English brown rape is steady, £37 10s., on the spot; refined, £39 10s. to £40; foreign, £41 to £42. Fine Lagos palm sells at £40 10s. Olive and cocoanut oils are inactive.

Tallow.—The market is flat, with price tending downwards. Y.C., on the spot, is quoted at 42s. 9d.; and 43s. 6d. for December.

Coals.—Haswell, 21s. 9d.; Best Hartlepool, 21s.; Original Hartlepool, 21s. 9d.; South Hetton, 21s. 9d.; Harton, 19s. 9d.; Tanfield Went, 14s. 3d. per ton.

Metropolitan Cattle Market (Thursday, Nov. 14).—Our market to-day was but moderately supplied with beasts, yet all breeds moved off slowly, at Monday's currency. The top figure was 5s. per 8lb. Prime Downs and half-breds were in fair request, at previous rates—viz., from 4s. 6d. to 4s. 10d. per 8lb. Otherwise, the mutton trade ruled heavy, at barely stationary prices. We have to report a slow inquiry for calves—the supply of which was rather limited—on former terms. The quotations ranged from 4s. 4d. to 5s. 4d. per 8lb. The sale for pigs was heavy, at late rates. In milch cows, very few transactions took place.

Per 8lb. to sink the offal:—Coarse and inferior beasts, 3s. 4d. to 3s. 8d.; second quality ditto, 3s. 8d. to 4s. 0d.; prime large oxen, 4s. 2d. to 4s. 4d.; prime Scots, 4s. 8d. to 5s. 0d.; coarse and inferior sheep, 3s. 2d. to 3s. 6d.; second quality ditto, 3s. 6d. to 4s. 0d.; prime coarse-woolled ditto, 4s. 1d. to 4s. 6d.; prime Southdown ditto, 4s. 8d. to 4s. 10d.; large coarse calves, 4s. 4d. to 4s. 8d.; prime small ditto, 4s. 10d. to 5s. 4d.; large hogs, 3s. 4d. to 3s. 8d.; neat small porkers, 4s. 10d. to 5s. 2d.; suckling calves, 21s. to 24s.; and quarter-old store pigs, 22s. to 26s. each. Total supply: Beasts, 930; sheep, 3600; calves, 160; pigs, 200. Foreign: Beasts, 150; sheep, 312; calves, 60; pigs, 20.

Newgate and Leadenhall.—Beef from 3s. 2d. to 4s. 6d.; mutton, 3s. 6d. to 4s. 4d.; veal, 3s. 4d. to 4s. 6d.; pork, 3s. 2d. to 4s. 2d. per 8lb., by the carcase. Robert Herbert.

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THE LATE EARL OF ROSSE.

An obituary notice of the late Earl of Rosse, Baron Oxmantown, Knight of St. Patrick, who died some days ago, at his town house, in Dublin, aged sixty-seven, appeared in our last publication. This distinguished nobleman, whose family name was Parsons, was a member of the House of Commons from 1821 to 1834, and a member of the House of Lords since 1845, being elected in that year one of the representative peers of Ireland. He was President of the Royal Society and Chancellor of the University of Dublin. He stood high in his own neighbourhood as a good landlord and country gentleman; but it is by his great merits as a practical astronomer and as a patron of astronomical science, more especially as the constructor and proprietor of the most powerful telescope in existence, that he has gained a world-wide renown. The matchless instrument erected by his Lordship, at a cost of more than £20,000, in the park adjoining his mansion of Birr Castle, Parsonstown, in the King's County, occupied sixteen years in its construction, under the noble owner's personal direction and superintendence. It is a reflecting telescope, consisting of a speculum or mirror, 6 ft. in diameter, placed at the lower end of a huge tube, which is suspended to massive scaffolding, between piers of solid masonry, about 50 ft. high, with step-ladders, platforms, and galleries affording convenient access to the point of observation near the upper end of the tube; as the astronomer, while using this kind of telescope, does not look towards the star or other celestial object itself, but looks into the interior of the tube, and sees the image of that object reflected upwards from the mirror. The manufacture of the circular disc of bronze, measuring 6 ft. across, and weighing about four tons, with a very slight concavity of its upper surface, which must be shaped not exactly as part of a sphere, but must depart from the spherical proportions only to the ten-thousandth part of an inch, was a most difficult task of metallurgy; and the history of Lord Rosse's studies and experiments, for the purpose of solving this problem, shows him to have been a man of great ingenuity and extraordinary perseverance. In all the processes of compounding the metals, designing the mould, casting the bronze, grinding and polishing the mirror, and in contriving special machinery for these last operations, the Earl of Rosse took the most active part, himself ordering the workmen, and constantly superintending their labours. After many years of toil, frequent disappointments, and the spending as much money as would have purchased a fine estate, he achieved a perfect success. He made, likewise, another reflecting telescope, with a mirror 3 ft. in diameter; but it was by means of the great six-foot telescope that he was enabled to carry out a series of observations of the remotest star-clusters, or nebulæ, reported by him to the Royal Society in 1861, and published in their *Philosophical Transactions*. The general reader will find, however, in Mr. G. F. Chambers's compendious volume of "Descriptive Astronomy" (recently published by Macmillan and Co. for the delegates of the Clarendon Press in Oxford University) an account of the most important of these observations, beautifully illustrated by a set of wood engravings which show the appearance of each nebular group as viewed by Lord Rosse, compared with the imperfect view of it previously obtained by Sir John Herschel. The difference is particularly striking in the case of the so-called "crab" nebula in the constellation Taurus, and in that of the "dumb-bell" nebula in Vulpecula; while the discovery of the spiral or whirlpool nebulæ is acknowledged to belong to Lord Rosse. It is probable that these observations may lead to the explanation of some of the most interesting questions relating to the constitution of the starry heavens. Lord Rosse was a man of whom the Irish Peerage and the whole nation in the United Kingdom may well be proud: his example has done honour to his native country and to the present age, as well as to his rank and station. He is succeeded by his eldest son, hitherto known as Lord Oxmantown, who was born in 1840.

THE LATE EARL OF ROSSE, K.P.

The portrait of Lord Rosse is engraved from a photograph by Maull and Co.

BOATS FOR THE EMPRESS OF THE FRENCH.

These pretty vessels, a skiff and a canoe, purchased by the Empress of the French at the late Great Exhibition, were exhibited by the celebrated boat-builders, Messrs. Searle, of Stangate, Lambeth; both are built of bird's-eye maple and the finest Spanish mahogany, with gilt mouldings. The dimensions of the skiff are as follow:—length 21 ft., beam inside the rowlocks, 3 ft. 7 in., depth 12½ in. The canoe is decked with cedar, is 14 ft. in length, 2 ft. 2 in. beam, and 10¾ in. depth, with paddle 7 ft. long. Both are most beautiful examples of form and workmanship.

THE KING AND QUEEN OF GREECE.

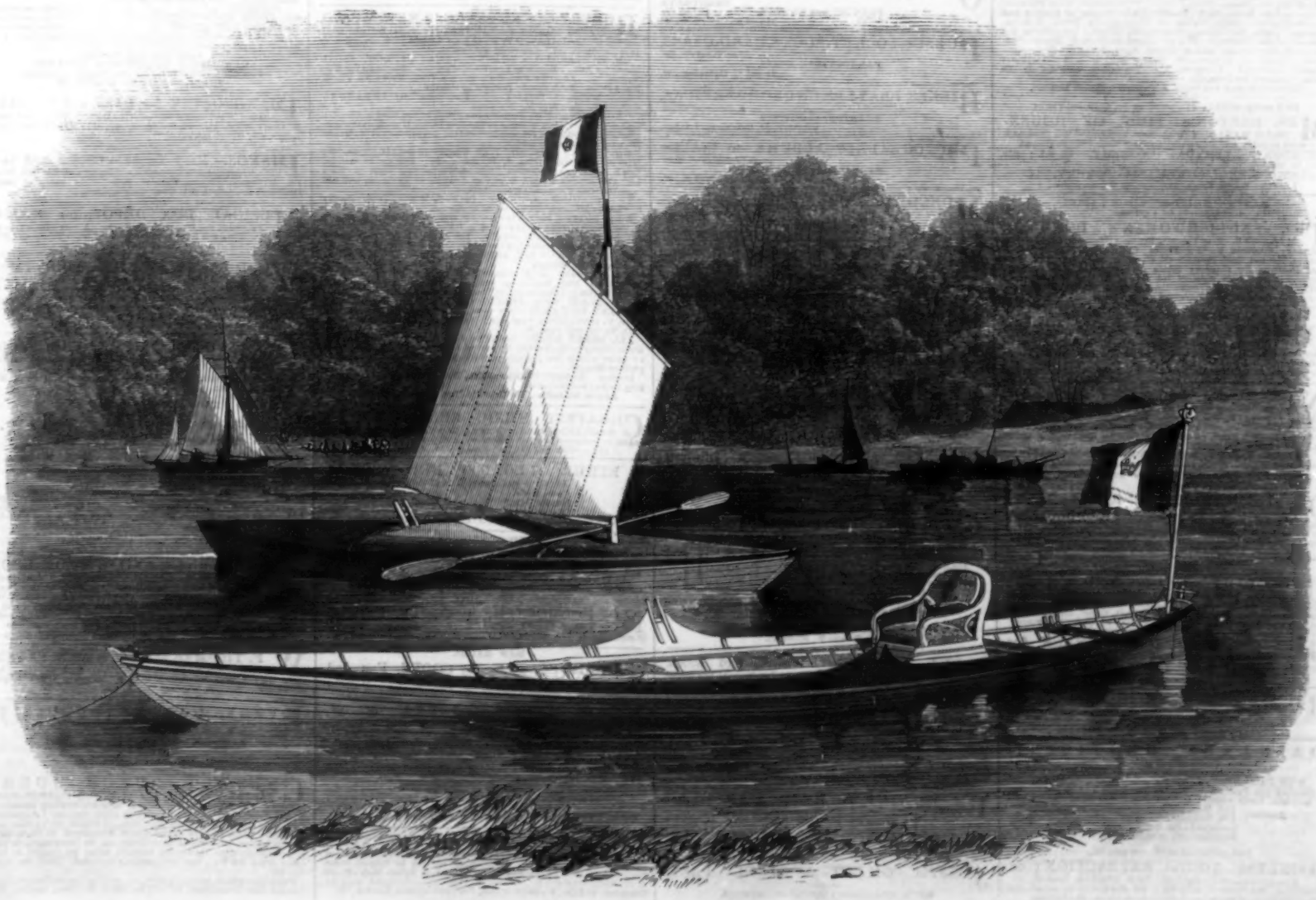
The marriage of the young King of Greece, or King of the Hellenes, as he is styled by diplomacy, reigning under the name of George I., to the Grand Duchess Olga, eldest daughter of the Grand Duke Constantine of Russia, and niece of the Czar Alexander II., took place, as our readers are aware, in the Imperial Chapel of the Winter Palace at St. Petersburg, on Sunday, the 27th ult., at eight o'clock in the evening. The Emperor of Russia and most of the Imperial family, with the Crown Prince of Denmark, elder brother of the Royal bridegroom, and the Duke Charles of Schleswig-Holstein Sonderburg-Glucksburg, his uncle, were present, besides the parents of the bride and an illustrious company of princes and princesses, nobles, courtiers, and official persons. The newly-married couple, whose Portraits are engraved on our front page, are both very young; the bride, eldest daughter of the Grand Duke Constantine and of the Grand Duchess Alexandra, *née* Princess of Saxe-Altenburg was born Aug. 22, 1851, consequently she has scarcely entered her seventeenth year; the bridegroom, a son of the King of Denmark, was born Dec. 24, 1845, therefore he is not yet twenty-two. He is brother to Princess Dagmar, wife of the Czarewitch, or Crown Prince of Russia, and he is also brother to the Princess of Wales. His Portrait is from a photograph by Disderi.

MUSIC.

At Her Majesty's Theatre Mdlle. Kellogg, our new American prima donna, appeared for the second time, on Saturday last, as Margaret, in Gounod's "Faust," and was, if possible, still more warmly received than on the first night. During the previous week the following operas were given:—On Monday, "Semiramide," with Mdlle. Titiens as the Babylonian Queen, Mdme. Trebelli as Arsace, Signor Bettini as Idreno, and Signor Gassier as Assur; on Tuesday, "Lucia di Lammermoor," with Mdlle. Sinico as Lucia, Signor Tombesi as Edgardo, and Signor Gassier as Enrico; on Thursday, "La Traviata," with Mdlle. Kellogg (a second time); and on Friday, "Norma," with Mdlle. Titiens, Mdlle. Sinico, Mdlle. Baumeister, Signor Tombesi, and Signor Foli. The house has been full every night.

The Crystal Palace concert of Saturday last was as attractive as these admirable entertainments usually are. It included Weber's overture to "Preciosa," Beethoven's eighth symphony in F, Molique's violoncello concerto, performed by Piatti, for whom it was expressly composed, and the overture to "Prometheus"—*not* Beethoven's, but written by Bargiel, a composer of the Schumann school, and a musician apparently of merit, though Beethoven's charming work would have been more generally welcome. Among the vocal pieces there was a new ballad, "Little bird, so sweetly singing," composed by Mr. G. B. Allen, and sung by Mdlle. Liebhart—a very pretty composition, very prettily sung, and very warmly applauded.

The tenth season of the Monday Popular Concerts commenced on Monday last. These concerts are now of world-wide renown, and it would be unnecessary to give any account of their nature or plan.



SKIFF AND CANOE FOR THE EMPRESS OF THE FRENCH.

It may be sufficient to say that the concert of Monday evening was evidently the beginning of a prosperous season. The hall was crowded, and in every corner we saw the familiar faces of persons distinguished as artists and amateurs, eager listeners to the refined and classical entertainment provided for them. The programme of the concert was as follows:—

PART I.

Serenade Trio, in D major, op. 8, for violin, viola, and violoncello—MM. Straus, Henry Blagrove, and Piatti	Beethoven.
Song, "Swedish Winter Song"—Miss Cecilia Westbrook	Mendelssohn.
Songs "To Chloe" / "May Dew" Mr. Cummings	Sterndale Bennett.
Fantasia Sonata in C major, op. 78, for pianoforte alone—Mdme. Arabella Goddard	Schubert.

PART II.

Sonata in D major, op. 12, No. 1, for pianoforte and violin (first time at the Monday Popular Concerts)—Mdme. Arabella Goddard and Herr Straus	Beethoven.
Duet, "Per valli, per boschi"—Miss Cecilia Westbrook and Mr. Cummings	Biangini.
Quartet in D minor, op. 76, No. 2, for two violins, viola, and violoncello—MM. Straus, L. Ries, Henry Blagrove, and Piatti	Haydn.

Beethoven's Serenade Trio, with which the concert began, is in the author's earliest style, having been published at Vienna in 1797, when he was but a little turned of thirty. In form and manner it reminds us of Mozart; but Beethoven's own genius pervaded it, and perhaps he has never, during his whole career, produced a more exquisite work. It is well known to English amateurs, and has been several times performed at these concerts, but never with greater effect than now. Schubert's Fantasia Sonata, now performed by Arabella Goddard for the second time, called into action the fair pianist's highest powers. "Of all Schubert's pianoforte works," says Schumann, "it is the most perfect in form and conception." It comes nearer, indeed, to the standard of Beethoven than any pianoforte music of the present period, and the audience listened to it with enthusiastic delight. Beethoven's sonata in D major, for the piano and violin, is another exquisite specimen of his earliest style. Its execution by Mdme. Arabella Goddard and M. Straus was a highly finished performance, and its reception by the audience showed that Beethoven's old productions can never lose their youthful freshness. The vocal portion of the concert was of even more than usual interest. Mendelssohn's pathetic "Swedish Winter Song" was sung by Miss Westbrook with true feeling; and Sterndale Bennett's two little gems enchanted everybody. We need scarcely add that Mr. Benedict acted as conductor with his usual care and ability. At the second concert, on Monday next, Mendelssohn's newly-published posthumous work, the eighth book of the "Lieder ohne Worte," is to be performed by Mdme. Arabella Goddard.

The Philharmonic Society of Liverpool stands in the highest rank among our provincial musical institutions, whether we regard the grand scale on which its concerts are got up, the quality of the music performed, the character of the performers, or the taste and intelligence of the audience. In all these respects this society may be compared without disadvantage to its great metropolitan rival. The society's ninth concert, last week, was an entertainment of more than ordinary excellence. The orchestral pieces were Mendelssohn's symphony in A minor, Spontini's overture to "La Vestale," and Weber's to "Abon Hassan"—all executed with admirable effect. There was, moreover, a pianoforte concerto—that of Mr. Benedict, in E flat—magnificently played by Mdme. Arabella Goddard, for whom it was originally composed, and who has introduced it on several occasions, with eminent success, in London and elsewhere. The Liverpool amateurs unanimously confirmed the verdict of the Crystal Palace, Philharmonic, and Birmingham Festival audiences, applauding the work and its gifted interpreter with genuine enthusiasm. The concerto in E flat bids fair to make the circuit of musical Britain; only, be it observed, it requires an Arabella Goddard to do it entire justice. In the second part Mdme. Goddard played Thalberg's brilliant fantasia on "Masaniello" with marvellous facility and grace, but could not be induced to do more than come forward and acknowledge, through repeated inclinations, the rapturous encore elicited by her very remarkable performance. The vocal part of the programme was full of operatic variety; and that the solos and duets were done justice to may be gathered from the fact that the singers were Mdme. Trebelli-Bettini, Signor Bettini, and M. Gassier, from Her Majesty's Theatre. We had also two pretty choruses from Gounod's "Reine de Saba."

Mr. Aguilar gave his second pianoforte matinée at his residence on Wednesday last. The programme was as follows:—Sonata in F minor—Beethoven; "Bénédiction de Dieu dans la solitude," Harmonies poétiques et réligieuses, No. 3—Liszt; Tarantelle—Chopin; "Last look" (Romance)—Aguilar; Le Désir (Transcription)—Aguilar; Sonata in G—Aguilar; "Lieder ohne Worte" Mendelssohn; "Chi mi frena" (Transcription)—Aguilar; Sunset-glow (Rêverie)—Aguilar; Idyll (Valse brillante)—Aguilar. The rooms were crowded to the doors with fashionable company.

Mdlle. Maria Krebs, the young pianist, who was so great a favourite at the Crystal Palace Concerts, lately gave a very successful concert at Dresden. The programme included Beethoven's "Kreutzer Sonata," Liszt's Fantasia on "Don Giovanni, a prelude and fugue of Bach, and pieces of Spohr, Schumann, and Weber.

THE THEATRES.

THE season progresses favourably, and each house in turn, according to its specialty, engages almost every week in the production of some new drama by which its bill may be strengthened. On Monday, this was notably done at the Strand, when a new and original comedy in two acts, by Mr. William Brough, was placed on the stage, and succeeded, as it deserved, admirably. It is one of the most ingenious little dramas that we ever witnessed. Out of a few simple elements Mr. Brough has evolved a series of perplexities which provoke the utmost surprise and merriment from the spectators, who cannot help strongly sympathising with the benevolent hero, capitally well played by Mr. Belford. The character of this gentleman is indicated by the title of the piece, "Kind to a Fault." Mr. Frank Goldsworthy has lately come into a large fortune, and, reflecting that he will never be able to spend it all, indulges himself in habits of generosity, and seeks to benefit everyone brought into contact with him. He has intrusted his affairs to a kind-hearted but eccentric attorney, who lives in the neighbourhood of an estate which he has just purchased, Mr. Drewitt (Mr. Parselle), who has a fair and faithful wife (Miss Fanny Gwynne), of whom he is both proud and jealous. They have a man and maid servant, Parker (Mr. James), and Jenny (Miss E. Johnstone), in love with each other, the man being as jealously disposed as his master. Goldsworthy, coming to consult his solicitor, is thrown among this group, and gets involved in the meshes of the net in which they are all floundering. To Jenny he gives a cheque for forty pounds to enable her to marry Parker and set them up in business; but Parker, who is set as a watch upon his mistress by his jealous master, misinterprets the transaction, and, after covering the poor girl with reproaches, gets madly drunk. The plot is thickened by the circumstance of an elopement between Arthur Honiton (Mr. Gaston Murray) and Jessie Bluck (Miss Fanny Hughes), who seeks the aid of her friend Mrs. Drewitt, in boy's habiliments, and thus gives some ground for her husband's suspicions. Goldsworthy has already, by a benevolent interference, complicated matters between the runaways, and is now further implicated by lending his trap for the escape of Jessie and procuring her lodgings in London at his own chambers in Piccadilly, to the infinite indignation of Mrs. Cumberly (Mrs. Manders), the landlady. Here all parties at last assemble, with, in addition, Alderman Bluck (Mr. H. J. Turner) and a railway detective (Mr. Collier). Here all kinds of errors are committed, and poor Goldsworthy is baited as the profligate tempter of three women—Mrs. Drewitt, Jenny, and Jessie—and has to endure the abuse of Mr. Drewitt, the drunken Parker, the mistaken Honiton, and the sternly proper Mrs. Cumberly. The tangled skein at last is untwisted, and the curtain falls to immense applause. Perhaps there is a little too much intricacy in the last scene, and the dénoûment may be too long delayed; but, altogether, a more skilful piece of dramatic handiwork has seldom been placed on the boards.

Mr. Fechter played Hamlet on Monday, and intended to have done so during the week, at the Lyceum, but was taken seriously ill. The season terminates to-night; but Mr. Ryder advertises that he will reopen the theatre shortly, in favour of Miss Vestivale, from the imperial theatres of Paris and other European cities. The lady will make her appearance in the character of Romeo.

The New East London has produced an attractive piece, by Mr. Travers, entitled "The Last Moment," which, fall as it is of striking situations, promises to retain its position for some time.

On Monday night Miss Helen Faucit commenced an engagement of six nights at the Theatre Royal, Edinburgh. The play was "The Merchant of Venice;" and Miss Faucit's Portia is described as equalling the best performances of her earlier triumphs on the stage.

CHESS.

TO CORRESPONDENTS.

M. SCHOUMOFF, St. Petersburg.—The problems—always acceptable—have reached us safely, and shall have immediate attention.

G. R. B., Dundee.—We are glad to have received, at length, the games in the second match. Do these you have sent comprise the whole which were played in this contest?

M. A.—There is a movement on foot to place the *Chess World* upon a firmer basis by obtaining a *certain* number of annual subscribers, and not trusting solely to the casual sale of the magazine. We trust the attempt will be successful. While Germany supports two periodicals exclusively devoted to chess, and France does the same; while Italy, and Russia, and Spain, and even Holland, has each its special organ for the cultivation of the game; it would be discreditable to England, where chess is played more than anywhere else, that she should not maintain a publication of the kind as well as they.

G. W. F., Hull.—In the position sent, it appears to us that White, with the best play on both sides, ought to win the game.

R. T.—The promoters of the "Civil Service Chess Club" may confidently reckon on our assistance in the formation of their new club. It would be well for them to consider, however, whether the best plan for the attainment of their object is not to join the now firmly-established "Westminster Chess Club."

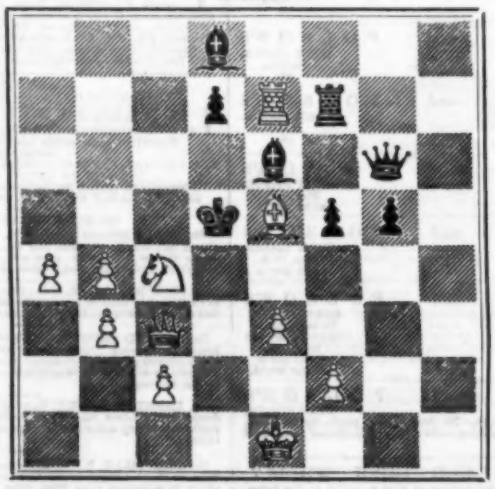
SOLUTIONS OF PROBLEM NO. 1230 by A. Vandesteene, L. P., W., Ariel; S. P. Q. B., of Bruges; Nemo, M. D., Philip, Miles, Old Joe, Sigismund J. P., T. C. D., L. S. D.; Van Dunk, of Sluys; Adam Bede, R. B. S., Leopold, Box and Cox, Timothy, Long Tom, Edmund, H. S. B., Cosmopolitan, James Plush, Sawney, Hermes, Try-Again, N. C., Charley, R. G. D., Pip, E. C., A Swede, F. R. S., Jim, Theodore, W. P. W., I. H. Hood, Bridlington Quay; M. F., of Woolwich; Henry Frau, of Lyons; Kelpie, Adelphi; M., Traveller's Club; Stanley, Victor, Garibaldi; Dromio, of Edinburgh, are correct. All others are wrong.

SOLUTION OF PROBLEM NO. 1236.

WHITE	BLACK	WHITE	BLACK
1. R takes K P	P takes R, or *	3. P to Q 4th (ch)	K takes P
2. Q to K B 5th	K takes Kt	(If he take Pawn with Pawn, White replies with 4. B to Q B 6th (dis. ch) and 5. Q to Q B 2nd, or Q to Q B 8th. Mate.)	
(If he play P to Q Kt 6th, then follow 3. Kt to Q B 4th, 4. P to Q 3rd and mate next move.)	B takes B	4. Q to K 4th (ch)	K moves
		5. Q takes K P.	Mate.

*) 1. R takes K P — B to K 3rd
(Should Black play K takes R, the answer is—2. Kt to Q 3rd (ch); 3. Q to Q B 5th (ch), and 4. Q takes K P. Mate.)
2. B takes R — P takes Q P
(If here Black 2. R takes B, White continues with 3. Q takes R; 4. Q to Q 5th (ch), and mates next move.)
3. Q to Q 8th (ch) — K takes R
(If he interpose the Rook, White plays 4. Q takes R (ch), and mates next move.)
4. Q to Q 5th (ch) — K to B 5th
5. Q to Q 4th. Mate.

PROBLEM NO. 1238.
By Mr. W. GRIMSHAW.
BLACK.



WHITE.
White, playing first, to mate in three moves.

CHESS IN ST. PETERSBURG.

An interesting specimen of Russian chess, played between Mr. V. MIKHAILOFF and Mr. N. PETROWSKI: the former, editor of the *Shakhmatny Listok* (a St. Petersburg chess journal no longer existing); the latter, an amateur well known in Russia for his profound knowledge of chess-problems.

(*Evans's Gambit.*)

WHITE (Mr. M.)	BLACK (Mr. P.)	WHITE (Mr. M.)	BLACK (Mr. P.)
1. P to K 4th	P to K 4th	are extremely well played for several moves.)	
2. Kt to K B 3rd	Kt to Q B 3rd	21.	P takes Q P
3. B to Q B 4th	B to Q B 4th	22. Kt to Q B 6th	Q to K B 3rd
4. P to Q Kt 4th	B takes Kt P	23. P to K 5th	Q to K 3rd
5. P to Q B 3rd	B to Q R 4th	24. Q to K Kt 5th	Kt to K B 4th
6. P to Q 4th	P takes P	25. Kt takes Q P	
7. Castles	P to Q 6th	(This move, so irresistibly tempting, was a serious mistake, and ought to have cost White the game. He should have taken the Kt with his Queen, and he might then have given his opponent a good deal of trouble, ex gr.:—	
8. Q takes P		25. Q takes Kt	Q takes Kt
(This is inferior to playing the Queen to Q Kt 3rd.)		26. Q to K Kt 5th	P to K Kt 3rd
8.	P to Q 3rd	27. B to K B sq	&c.
9. Kt to K Kt 5th	Kt to K R 3rd	25.	Q takes K P
(Kt to K 4th at the first view looks stronger than the move adopted; a little reflection suffices, however, to prove the contrary. Suppose—		(The position is singularly interesting.)	
9.	Kt to K 4th	26. Q R to Q sq	Q R to Q sq
10. B takes P (ch)	Kt takes B	27. K R to Q 3rd	Q R to Q 4th
11. Kt takes Kt	K takes Kt	(Here Mr. Petrowski overlooked his opportunity. If he had captured the Kt with R, he must infallibly have won the game:—	
12. Q to Q 4th (ch), &c.)		27.	R takes Kt
10. P to K B 4th	Castles	28. R takes R	Q to Q B 4th
11. B to K 3rd	B to Q Kt 3rd	and White has no resource.)	
12. B to Q 4th	Kt to K 4th	28. Kt takes Kt	R takes R
(A very ingenious manœuvre.)		29. Kt to K B 6th (ch)	K to R sq
13. P takes Kt	B takes B (ch)	30. Q takes Q	Q R takes B (ch)
14. P takes B	Q takes Kt	31. K to B 2nd	Q R to Q sq
15. Kt to Q 2nd	P takes P	32. Kt to K B 5th	P to K B 3rd
16. Kt to K B 3rd	Q to K 2nd	33. Q to K 7th	R to K Kt sq
17. Kt takes P	B to K 3rd	34. Kt to Q 6th	Q R takes Kt
18. R to K B 3rd	B takes B	35. Q takes Q R	
19. Q takes B	P to Q Kt 3rd	and Black abandons the *partie*.	
20. B to K Kt 3rd	P to Q B 4th		
21. Q to Q B sq			
(The attack and defence from this point			

Malta was visited by two slight shocks of earthquake yesterday week. The island is at last free of the fearful pest of cholera.

The Danish journals contradict the announcement of the death of the Countess Danner, morganatic wife of the late King Frederick VII.

Mdme. Grisi and her children are residing at the beautiful Villa Salviati, near Florence, which is completed. Signor Mario has gone for the winter to St. Petersburg.

The aggregate of agricultural returns for Great Britain in the present year has been made up, and under corn crops of all kinds there were in England and Wales 7,941,578 acres, against 7,921,244 acres returned in 1866; and in Scotland, 1,397,012 acres, against 1,368,540 acres in 1866. The land under wheat is returned for England and Wales at 3,275,293 acres, against 3,275,293 acres in 1866; and for Scotland at 115,118 acres, against 110,101 acres in 1866. The number of cattle is returned for England and Wales as 4,017,790, against 3,848,435 in 1866; and for Scotland as 979,170, against 937,401 in 1866. Sheep are returned for England and Wales to the number of 22,097,286, against 16,793,304 in 1866; and for Scotland to the number of 6,893,603, against 5,355,077 in 1866. The large increase in the number of sheep returned in 1867 as compared with the previous years is to be accounted for by the fact that the returns in 1866 were made, for the purpose of the cattle-plague inquiry, at a date preceding the lambing season in some parts of Great Britain.

OBITUARY OF EMINENT PERSONS.

LORD RONALD DOUGLAS HAMILTON.

Lord Ronald Douglas Hamilton, who died, on the 6th inst., at Great Malvern, of gastric fever, was the fourth son of his Excellency Sir James Hamilton, second Marquis of Abercorn, K.G., the present popular and able Lord Lieutenant of Ireland, by his wife, Lady Louisa Jane Russell, second daughter of John, sixth Duke of Bedford. Lord Ronald was born on March 17, 1849, and his untimely demise is the cause of the deepest grief to his family and friends.

MARSHAL O'DONNELL.

Don Leopold O'Donnell, Duke of Tetuan, Count of Lucena, Count of Abispal, a Marshal in the Spanish army, and grandee of the first class, a distinguished soldier and statesman of Spain, who died, on the 5th inst., at Biarritz, was the third of the four sons of Don Carlos O'Donnell, Count of Abispal, and Captain-General of Old Castile. His two elder brothers perished on the side of the Prince Don Carlos, in the Carlist war. He himself was born in Spain, in 1808. He entered the Spanish army early in life, and became a Colonel at five-and-twenty. In the Carlist war he declared for and supported Queen Christina, and was created Count of Lucena on his having compelled Cabrera to raise the siege of the town of that name. At the conclusion of the civil war he was promoted to the rank of Lieut.-General. On Queen Christina's abdication of the Regency, in 1836, he took refuge in France. After the fall of Espartero, in 1843, General O'Donnell was enabled to return to Spain, and was soon afterwards sent to Cuba as Captain-General. On his reappearance he was appointed Director-General of Infantry. Being implicated in a conspiracy at the beginning of 1854, he was compelled to secrete himself, but soon afterwards left his retreat and put himself at the head of the insurrection, which resulted in a change of Ministry, Espartero being commanded to compose a new one, in which O'Donnell held the department of War. For some time the two chiefs agreed, but at length a dispute arose, and after a struggle of some days' duration the whole Ministry resigned, save O'Donnell, who formed a new Ministry. He re-established the Constitution of 1845, and as a natural result Narvaez returned to power. O'Donnell became Minister again on July 1, 1858, and formed one of the most successful Spanish Governments of modern days. The remarkable event of his administration was the war against Morocco, in which O'Donnell won a great victory on Feb. 4, 1860, and on the 6th Tetuan was captured, and eventually a peace was imposed on Morocco. He was promoted to the rank of Field Marshal, and created Duke of Tetuan. He continued in office till February, 1863, when he resigned in consequence of the Queen's refusal to dissolve the Chambers, and was succeeded as War Minister by General Concha. Since then he has been frequently both in and out of power. Narvaez, in 1864, was once more President of the Council; but in the next year O'Donnell held the reins; however, in July, 1866, he was compelled to resign office, and Narvaez resumed the post of President. O'Donnell retired latterly to Biarritz, where he died. The Marshal married a Catalan lady, the widow of a manufacturer of Tarasa, near Barcelona, by whom he had two daughters. He leaves a brother, Don Henry O'Donnell, a General in the Spanish service. The Marshal was a scion of the great Irish race of O'Donnell, once so distinguished in Irish and English annals; but now (as remarks Sir Bernard Burke, in his "Vicissitudes of Families,") "an illustrious exiled house, whose later achievements adorn, unluckily, the page of foreign instead of domestic history." The immediate pedigree of the Marshal may be thus briefly given:—Colonel Manus O'Donnell, a Cavalier soldier of Charles I., was grandson of the Prince of Tyrconnel, and nephew of Nyall Garve O'Donnell, Baron of Lifford, who died in the Tower of London, in 1626. The Colonel was direct ancestor of Calvagh Duff O'Donnell, of Murrisk, in the county of Mayo, who had three sons, of whom the eldest is now represented by C. J. O'Donel, Esq., barrister-at-law and a police magistrate in Dublin; the second son founded the Spanish branch, which the deceased Marshal represented; and the third son founded a branch in Austria, also of high military renown.

SIR MATTHEW SAUSSE.

Sir Matthew Richard Sausse, M.A. (Trinity College, Dublin), Q.C., and late Chief Justice of the High Court of Judicature in Bombay, who died suddenly, from paralysis, on the 5th inst., at Kilkenny House, Viscount Castlerosse's seat, in Ireland, was the second son of the late Richard Sausse, Esq., of Armsboro', in the county of Kilkenny, and of Carrick-on-Suir, in the county of Tipperary, by his wife, Jane, eldest daughter of John Duffey, Esq., of Prospect Lodge, Roebuck, in the county of Dublin. Mr. Richard Sausse, Sir Matthew's father, was a grand juror of the county of Tipperary; he was also of Toulouse, in France, where he had resided, and had assumed the name of de la Saussaye for some years preceding his death, a name still used by Sir Matthew's elder brother, Sir Richard Frederick de la Saussaye, a General in the Spanish service, Governor of Carthagena, and Commandant of Murica. Sir Matthew Sausse, the subject of this notice, was born in 1809, and was educated at Trinity College, Dublin. He was called to the Irish Bar in 1829, and was appointed a Q.C. in 1849, and for some time was Crown Prosecutor on the Leinster district. He was Chairman of the Wexford Quarter Sessions from 1851 to 1855, when he was appointed a Puisne Judge at Bombay, and was knighted. Owing to the remarkable legal attainments and abilities which he displayed, he was, in 1859, appointed Lord Chief Justice of the Court at Bombay; and under the new Act, in June, 1862, was reappointed as Chief Justice of that High Court of Judicature. On his return home from Bombay he was made a member of the Indian Council. Sir Matthew married, Nov. 27, 1866, the Hon. Charlotte Henrietta Fraser, youngest daughter of the present Lord Lovat, K.T. Sir Matthew's premature death is deeply lamented by his family, his friends, and his acquaintance, to whom he was much and deservedly endeared.

WILLIAM SAUNDERS, ESQ.

William Saunders, Esq., barrister-at-law, who died at Southport, Lancashire, on the 29th ult., was member of a highly respectable family, and was brother of Charles Saunders, Esq., Judge of the County Court of Somersetshire. He was born in 1817, and was called to the Bar by the Hon Society of the Middle Temple in 1844. He went the Northern Circuit and the Lancashire Sessions, and attained a very fair amount of practice. Mr. Saunders was a gentleman of high honour, much ability, and a most amiable disposition, and was deservedly popular in the profession and among a numerous circle of friends. Mr. Saunders's death is attributed to a railway accident, from which he never recovered, and for which he obtained £2000 damages against the railway company in question.

M. DUCHATEL.

M. Charles Marie Tanneguy Duchatel, a French statesman, who died on the 6th inst., was the son of a humble employé at Bordeaux, and was born in Paris, Feb. 19, 1803. He was early in life at the French Bar, but, relinquishing that profession, became an influential journalist. He, after the Revolution of 1830, was made a member of the Council of State. He, in 1832, was elected a member of the Chamber of Deputies; and, in 1833, was nominated Secretary-General and Minister of Finance. He brought forward the question of the Spanish Bonds, and was the means of introducing some reforms into the French financial system. He accepted, in 1841, the post of Minister of the Interior, which he filled until the overthrow of the house of Orleans, in 1848. He was a Conservative. While Minister of the Interior he did much to establish and promote the success of the French railways. He took no very active part in politics after the reign of Louis Philippe, and he had since the revolution of December, 1851, lived in complete retirement.

WILLS AND BEQUESTS.

The will of **Kenneth Macaulay, Esq., Q.C., formerly M.P. for Cambridge**, is contained in these few words:—"One thousand pounds to my brother Tom, all the residue to my dearest wife absolutely.—Kth. Macaulay." The will is without date, but was written by the testator on April 22 or 23, 1865. The testator died July 29, 1867, at Ardincaple House, Cambridgeshire, at the age of fifty-two. The personalty was sworn under £12,000. The testator was the youngest son of the Rev. A. Macaulay, and cousin of the late Lord Macaulay, P.C.

The will of **Edward Fisher Sanderson, Esq., formerly** merchant of the city and State of New York, but late of Sheffield, was proved at Wakefield, under £80,000 personalty in this kingdom—the executors for England and elsewhere, except America, being Thomas Sanderson Furniss, Esq., of Lincoln's-inn, and Edward Toser, of Sheffield, the confidential clerk in the house of Sanderson Brothers and Co.; the executors for the United States being Julius C. Sanderson, Edward Frith, and Gilbert M. Speir. The wife is appointed guardian of infant children. The will is dated March 10, 1858; and a codicil Nov. 15, 1865. To his wife he leaves his furniture, carriages, horses, plate, jewellery, personal ornaments, minerals, philosophical and chemical apparatus, paintings, &c.; and all other articles and effects at any of his residences absolutely. He leaves 20,000 dols. to be divided into six equal parts of 3000 each, to be paid to each of his children; and out of the residue of his property to pay one sixth part to his son Thomas, and the interest of the remainder to his relict for life, and the principal, at her decease, to be divided equally amongst his five daughters. There is a legacy of 500 dols. to the St. George's Society, New York. He directs that all his property invested in the firm of Sanderson Brothers and Co. should so remain until such times as his children shall call for their respective shares.

The late **Charles Stockton, jeweller, of Birmingham, died** possessed of £10,000 personalty, and has left charitable bequests to several institutions in that town—viz., the General Hospital, Queen's Hospital, General Dispensary, each £100; Bluecoat School, Deaf and Dumb Asylum, Blind Asylum, each £50; and small legacies to other institutions.

The late **Mrs. Marianna Hooper, of Andover**, has bequeathed to each of the following societies a legacy of £500—viz., the Church Missionary Society, the Society for the Propagation of the Gospel, Wesleyan Missionary Society, and the Church Building Society, as well as legacies to several other charities.

The late **Sir Charles Rugge Price, Bart., died intestate**, and limited letters of administration of his estate and effects have been taken out.

The wills of the undermentioned have been recently proved:—Richard Walker, Esq., £60,000 personalty; James Combe, Esq., £80,000; John Hollock, Esq., £30,000; John Propert, Esq., £30,000.

PLATE. — GOLDSMITHS' ALLIANCE (Limited) (late A. B. Savory and Sons). Manufacturing Silversmiths, 11 and 12, Cornhill, London (opposite the Bank). The best wrought SILVER SPOONS and FORKS, fiddle pattern, 7s. 4d. per ounce; Queen's pattern, 7s. 6d. per ounce. Many other patterns recently finished, plain or highly ornamented.

Fiddle Pattern.	£	s.	d.	Queen's Pattern.	£	s.	d.
12 Table Spoons	30	11	0	12 Table Spoons	40	15	0
12 Dessert Ditto	20	7	8	12 Dessert Ditto	25	9	7
12 Table Forks	30	11	0	12 Table Forks	40	15	0
12 Dessert Ditto	20	7	8	12 Dessert Ditto	25	9	7
2 Gravy Spoons	10	3	13	2 Gravy Spoons	12	4	10
1 Soup Ladle	10	3	13	1 Soup Ladle	11	4	2
4 Sauce Ditto	10	3	13	4 Sauce Ditto	12	4	16
4 Salt Spoons (gilt)	1	0	0	4 Salt Spoons (gilt)	2	2	0
1 Fish Slice (pierced)	2	10	0	1 Fish Slice (pierced)	3	5	0
2 Tea Spoons	10	3	18	12 Tea Spoons	14	5	12
1 Pair Sugar Tongs	0	15	0	1 Pair Sugar Tongs	1	5	0

A Pamphlet, illustrated with 300 Engravings, containing the prices of Tea and Coffee Services, and other articles required in furnishing, gratis on application, or post-free to any part of the British dominions.

For the use of committees, a work is published, with large lithographic drawings of plate kept ready for presentation.

IMPORTANT to PURCHASERS.
During extensive Alterations to Premises,
MAPPIN and WEBB
are now Selling
Table Knives and Cutlery of every description,
Electro Silver Plate
of best quality,
Dressing-cases, Travelling-bags, Fancy Stock, &c.,
at a bond fide Reduction of
One Third
from current prices,
at
77 and 78, Oxford-street, W.C.,
London.

DINNER, DESSERT, BREAKFAST, TEA, and TOILET SERVICES.—The newest and best patterns always on view. Every description of CUT TABLE GLASS in great variety.
The stock is well selected, and admirably suited for parties furnishing to choose from. A large assortment of ORNAMENTAL GOODS, combining novelty with beauty.
First-class quality—superior taste—low prices.
ALFRED B. PEARCE, 39, Ludgate-hill, E.C. Established 1760.

GARDNERS' GILT DINNER SERVICES, Richly Enamelled, complete, £4 4s. Manufacturers to the Queen.—453 and 454, Strand, Charing-cross (four doors from Trafalgar-square).

OETZMANN and CO.'S NEW CATALOGUE is the most complete extant. It contains the price of every article required in furnishing a house throughout of any class, and is an excellent guide to intending purchasers. Gratis on application, and post-free. 67, 68, 71, and 72, Hampstead-rd, London, N.W.

DEANE and CO.'S TABLE CUTLERY, celebrated for more than 150 years, remains unrivalled for quality and cheapness. The Stock is extensive and complete, affording a choice suited to the taste and means of every purchaser.

Ivory Handles.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Table Knives, per doz.	14 0	16 0	19 0	22 0	28 0	33 0	36 0
Dessert ditto	12 0	13 0	15 0	18 0	23 0	27 0	31 0
Carvers, Joint, per pair	5 0	5 6	6 6	7 6	9 0	9 6	11 6

Catalogues of Cutlery, Electro-plate, Lamps, Baths, Stoves, Ranges, Fenders, Fireirons, Iron Bedsteads, Copper and Tin Goods, &c., gratis and post-free. Established A.D. 1700.
Deane and Co. (46, King William-street), London Bridge.

NOSOTTI'S NEW PREMISES. LOOKING-GLASSES and Gilt Decorative Articles. The most extensive assortment in the kingdom. Prices most moderate. Novel designs. Packing free.
Thirteen Show-rooms, 397-8-9 and 9A, Oxford-street. Manufactories adjoining. Established 1822.

NOVELTIES IN FURNITURE. NOSOTTI'S New Premises contain the choicest Collection of Cabinet and Upholstery Furniture. All the best products, Parisian and English manufacture for Curtains, &c. Prices most moderate. Quality unsurpassed.
Thirteen Show-rooms, 397-8-9 and 9A, Oxford-street, W. Manufactories adjoining. Established 1822.

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER, by Appointment to H.R.H. the Prince of Wales, sends a Catalogue gratis and post-paid. It contains upwards of 600 Illustrations of his unrivalled Stock of
Sterling Silver and Electro-plate,
Nickel Silver and
Britannia Metal Goods,
Dish-Covers, Hot-water Dishes,
Stoves and Fenders,
Marble Chimney-pieces,
Kitchen-Ranges,
Lamps, Gasoliers,
Tea-Trays,
Urns and Kettles,
Table Cutlery,
Clocks and Candelabra,
Baths and Toilet Ware,
Iron and Brass Bedsteads,
Bedding and Bed-hangings,
Bed-room Cabinet Furniture,
Turnery Goods, &c.,
with List of Prices and Plans of the Twenty Large Show-rooms, at 39, Oxford-street, W.; 1, 1A, 2, 3, and 4, Newman-street; 4, 5, and 6, Perry's-place; and 1, Newman-yard, London.

SPOONS and FORKS.—RICHARD and JOHN SLACK, Manufacturers and Electro-Platers, solicit an inspection of their Stock and Prices; every article warranted to have a strong coating of pure silver over Slacks' Nickel; the fact of twenty years' wear is ample proof of its durability. Table spoons or forks, 30s. and 36s. per dozen; dessert, 20s. and 30s.; tea, 12s. and 18s. Orders above £3 carriage free. Catalogues, with 350 Engravings, post-free.—Richard and John Slack, 336, Strand, London.

GASELIERS, in Crystal, Glass, Ormoulu, or Bronze. Medieval Fittings, &c. A large assortment always on view. Every article marked with plain figures.
D. HULETT and CO., Manufacturers, 55 and 56, High Holborn, W.C.

BEST WORSTED DAMASK CURTAINS, in green, crimson, or any self colour, pinked top, bordered all round with best embroidered silk lace, 3 yards long by 51 in. wide, 25s. per pair; 94 yards, 30s.; 4 yards, 35s.; best Regn ditto, 3 yards by 54 in. wide, 42s.; 3½ yards, 50s.; 4 yards, 57s. 6d. Forwarded same day on receipt of order. One trial will ensure recommendation. Descriptive Lists post-free.
ORTZMANN and CO., 67, 68, 71, and 72, Hampstead-road, London.

BLANKETS at WHOLESALE PRICES. Stout, heavy Blankets, coloured wool, from 4s. per pair; good white ditto, 6s. 6d. per pair; heavy ditto, superior quality, best white wool, 8½ yards by 2 yards, weight 7 lb., 10s. per pair. Persons purchasing for charities, public institutions, hotels, or large establishments, should write for OETZMANN and CO.'S Wholesale Price List.

BANKRUPT STOCK, TABLE-CLOTHS and SHEETINGS.—Fine Damask Table-cloths, 2 yards long, 3s. 6d.; 2½ yards long by 2 yards wide, 7s. 6d.; 3 yards by 2½, 9s. 6d.; 2½ yards by 2½, 11s. 6d.; Strong Table-cloths, 2s. 6d.; large ditto, 4s. 6d. Orders per post receive prompt attention.
OETZMANN and CO.

THE NEW ALEXANDRA TOILET SERVICE, in all the most unique colours. Ewer, basin, &c., complete, 9 pieces, 6s. 11d. 100 patterns on view. Ironstone China Dinner Services, elegant style, from 1 guinea upwards; Dessert ditto, 15s. upwards. Dépôt for Wedgwood and Co.'s Ware.
OETZMANN and CO. Catalogue free.

TABLE GLASS, VASES, ORNAMENTS, &c. Excellent Tumblers at 2s. 6d. per doz.; Cut ditto, 4s. 9d.; very superior ditto, 6s. 9d. per doz.; Cut Wines, 5s. 2s. 6d. per doz; superior ditto, 5s. 9d.; Ales, Champagnes, Decanters, Lustres, Vases, &c., in great variety.—OETZMANN and CO., 67, 68, 71, 72, Hampstead-road (three minutes' walk from Tottenham-court-road and Gower-street station, Metropolitan Railway. All goods sent carefully packed.

THE FURNISHING OF BED-ROOMS.

HEAL and SON, of Tottenham-court-road, have greatly enlarged their premises, for the purpose of making a more complete arrangement of their stock.
They have now Ten separate Rooms, each completely furnished with a different Suite of Bed-room Furniture; these are irrespective of their general Stock, displayed in six galleries and two large ground-floor ware-rooms; the whole forming, they believe, the most complete Stock of Bed-room Furniture in the Kingdom.
Heal and Son's Illustrated Catalogue of Bedsteads, Bedding, and Bed-room Furniture sent free by post on application to
Heal and Son,
196, 197, 198, Tottenham-court-road, London, W.

HINTS ON HOUSEHOLD TASTE See the "Queen" for 1868.—With a view to meet the demand for modern Furniture of an artistic character, THE ART-FURNITURE COMPANY, of 75, Garrick-street, Covent-garden, are prepared to supply, at ordinary trade prices, domestic Furniture of an artistic and picturesque character. Most of the Furniture has been designed by Mr. Charles Eastlake, Architect, Author of "Hints on Household Taste."

EASY-CHAIRS, COUCHES, and SOFAS, best quality.—Upwards of 300 shapes constantly on view, or made to any pattern.—C. H. FILMER and SONS, 31, 32, and 33, Berners-street, W. An Illustrated Catalogue sent post-free.

BROWN and POLSON'S CORN FLOUR, for Children's Diet.

BROWN and POLSON'S CORN FLOUR, for all the uses to which the best Arrowroot is applicable.

BROWN and POLSON'S CORN FLOUR, boiled with Milk, for Breakfast.

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BROWN and POLSON'S CORN FLOUR, to thicken Soups.

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BROWN and POLSON'S CORN FLOUR, for Custards.

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BROWN and POLSON'S CORN FLOUR. One Table-spoonful to 1 lb. of flour makes Light Pastry.

BROWN and POLSON'S CORN FLOUR. Packets, 2d.

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BROWN and POLSON'S CORN FLOUR. To be obtained by order through Merchants in all parts of the world.

BROWN and POLSON'S CORN FLOUR.
CAUTION TO FAMILIES.—To obtain extra profit by the sale, other qualities are sometimes audaciously substituted instead of Brown and Polson's.

DUNVILLE'S OLD IRISH WHISKY, BELFAST, of same quality as that supplied to the International Exhibition of 1862, and Dublin Exhibition of 1865; and now regularly to the House of Lords and Paris Exhibition, the quality of which is equal to the finest French brandy, may be had direct from Belfast, in Butts, Hogsheads, Quarter Casks, and Cases. Shippers supplied in bulk or bottles. Quotations on application to Dunville and Co., Belfast; 97, 4, Beaufort-buildings, Strand, London, W.C.

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HORNIMAN'S TEAS are Eightpence per lb. CHEAPER. Confectioners are Agents in London; Chemists in every Town. Genuine Packets are signed Horniman and Co., London; Original Importers of the Pure Tea.

CHOCOLAT-MENIER for EATING, sold by all respectable Houses

CHOCOLAT-MENIER for BREAKFAST, sold by all respectable Houses

MENIER'S FRENCH CHOCOLATE defies all honest competition. The healthiest and most delicious ailment for Breakfast. Unadulterated, highly nutritious. Annual consumption exceeds 5,000,000 lb.—Menier, Paris; 23, Henrietta-street, Strand. Sold retail by all respectable houses.

PARIS EXHIBITION.—The ONLY MEDAL awarded to any English manufacturer of CHOCOLATE and COCOA has been obtained by J. S. Fry and SONS.
FRY'S CELEBRATED HOMŒOPATHIC COCOA.

A SILVER MEDAL, PARIS, 1867, has been awarded to J. S. FRY and SONS, Bristol and London, Chocolate and Cocoa Manufacturers to the Queen, the Prince of Wales, and the Emperor of the French.

FRY'S CHOCOLATE and COCOA.—SIX PRIZE MEDALS:—London, 1851 and 1862; New York, 1853; Dublin, 1865; Paris, 1855 and 1867.
Fry's Chocolate for the table and for eating, in great variety.

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EPPS'S COCOA. — The very agreeable character of this preparation has rendered it a general favourite. Invigorating and sustaining, with a refined and grateful flavour developed by the special mode of preparation applied, this cocoa is used as their habitual beverage for breakfast by thousands who never used cocoa before. It is made simply by pouring boiling water or milk on the preparation as sold. ½ lb., ¼ lb., and 1 lb. packets. This cocoa, as being prepared by Jas. Epps, the homœopathic chemist first established in England, is very commonly called Epps's Homœopathic Cocoa.

LIEBIG'S EXTRACT OF MEAT COMPANY (LIMITED), 63, Mark-lane, London. (Extractum Carnis, Liebig.) Caution.—None Genuine without Baron Liebig, the inventor's, certificate label. Paris Exhibition Gold Medal. Superior and cheapest stock for beef-tea, soups, entrées, and sauces. One pound, 14s.; ½ lb., 7s. 6d.; ¼ lb., 4s.; 2 oz., 2s.; equivalent to about one penny a portion of excellent beef-tea. Sold retail by Fortnum, and Mason, all Italian Warehousemen, Chemists, and Grocers. Wholesale by all wholesale houses and the Company, Boston.—Vendors of other extract, designating it "Liebig's," are liable to legal proceedings.

ALMOND FLAVOUR.—PRESTON'S ESSENCE of BITTER ALMONDS, free from Prussic Acid. This delicious Essence is the only kind that may be safely used for flavouring Custards, Blancmanges, &c., and all kinds of Pastry. Sold Retail by Chemists, Grocers, &c., in bottles, 6d., 1s., and 1s. 6d. each; Wholesale, PRESTON and SONS, 68, Londenhall-street, E.C. Observe the Trade Mark.

INVALIDS AND INFANTS.—NEAVE'S FARINACEOUS FOOD has for many years received the unqualified approval of Drs. Lankester, Hassall, Letheby, Ure, and other eminent medical men, as a highly nutritious and unmedicated diet for Invalids and Children. Sold in 1s. Canisters, by the leading Chemists and Grocers.
Neave and Co., Manufacturers, Fordingbridge.

SACCHARATED WHEAT PHOSPHATES, a Dietetic Preparation supplying an important deficiency in the ordinary food of Invalids and Children, especially in bread and milk. Sold in Bottles, at 1s., 2s., and 2s. 6d. each. None genuine without Trade Mark. Prepared by T. MORSON and SON, 31, 33, and 124, Southampton-row, London, W.C. Sold by all Chemists and Druggists.

TRANSPARENT CANDLES.—If you only want something pretty to look at, without minding a little smoke and smell, and a little bending and running over if the room should happen to be rather warmer than usual, buy any of the very transparent low-quality Paraffine Candles now sold freely everywhere at one shilling per pound; but if, along with beauty of appearance, you require steady brilliancy of light, and freedom from risk of those little occasional mishaps, tell your dealer to supply you with "Price's Gold-Medal Palmitine Candles," which, though charged at a higher price per pound, are really cheaper when the difference of quality is taken into account. They are believed to be the very best substitute yet produced for real Wax and Spermaceti, now at such an extravagant price, and are being introduced in place of them in the West-End Clubs, and elsewhere where excellence of quality is studied as well as economy.

CITY SOAPWORKS, 1851, 1862, 1867. Established 1712.

COMPOSITE HOUSEHOLD SOAP, concentrated and dried by machinery into ½-lb. cakes, each equal to ¾-lb. ordinary soap. Sold by all respectable dealers in 1lb. boxes. £5 chests (400 ½-lbs.), with lock and key, carriage paid. Wholesale only at the City Soapworks, Milton-street, London, E.C. See address on each piece.

THE SILVER PRIZE MEDAL has been awarded to the above.—Paris Exhibition, 1867.

PRICE'S SOLIDIFIED GLYCERINE (Patented). Gold Medal, Paris, 1867.—The newest and best toilet SOAP, wears well, gives a rich and fragrant lather, is entirely free from cocoanut oil or excess of alkali, and contains half its weight of Price's distilled glycerine. Sold in 4d. and 6d. tablets.—Price's Patent Candle Company (Limited), Belmont Works, Battersea, S.W.

SELF-FITTING CANDLES of all Sizes, and in various qualities, from 1s. per lb. upwards, may now be had everywhere. Order of your Chemist, Grocer, or Chandler (J. C. and J. FIELD'S Patent). They are Safe, Clean, and Economical, fitting all Candlesticks without either paper or scraping, and burning to the end.

CLEAR COMPLEXIONS for all who use the UNITED SERVICE SOAP TABLET, which also imparts a delicious fragrance.
Manufactured by
J. C. and J. FIELD, Patentees of the Self-fitting Candles.
Sold by Chemists, Oil and Italian Warehousemen, and others.
Use no other. See Name on each Tablet.

TEETH.—Mr. WARD, S.M.D., 188, Oxford-street, W.—Artificial Teeth, on vulcanite, from 5s.; complete set, from £5; on platinised silver, 7s. 6d.; complete set, £6; on platina, 10s.; complete set, £9; on gold, from 15s.; complete set, from £12. Fit, finish, durability, comfort, and mastication guaranteed. Stopping, 5s. Old Sets refitted or allowed for. Practical Dentist to the Profession many years. Consultation free.

DR. DE JONGH'S
(Knight of the Order of Leopold of Belgium)
LIGHT-BROWN COD-LIVER OIL, invariably pure, palatable, and easily taken.
Prescribed as the safest, speediest, and most effectual remedy for
CONSUMPTION, CHRONIC BRONCHITIS, ASTHMA, COUGHS, AND DEBILITY OF ADULTS AND CHILDREN.
Universally recognised by the highest Medical Authorities to be INCOMPARABLY SUPERIOR TO EVERY OTHER KIND.

SELECT MEDICAL OPINIONS.

Sir HENRY MARSH, Bart., M.D., Physician in Ordinary to the Queen in Ireland:—"I consider Dr. de Jongh's Light-Brown Cod-Liver Oil to be a very pure oil, NOT LIKELY TO CREATE DISGUST, and a therapeutic agent of great value."

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Dr. LAWRANCE, Physician to the Great Northern Hospital:—"I invariably prescribe Dr. de Jongh's Light-Brown Cod-Liver Oil, because it is not a manufactured compound in which the efficacy of this invaluable medicine is destroyed."

DR. DE JONGH'S LIGHT-BROWN COD-LIVER OIL is sold only in capsuled IMPERIAL half-pints, 2s. 6d.; pints, 4s. 9d.; quarts, 9s.; labelled with his stamp and signature, WITHOUT WHICH NONE CAN POSSIBLY BE GENUINE, by Chemists and Druggists throughout the world. SOLE CONSIGNEES,
ANSAR, HARFORD, and CO., 77, STRAND, LONDON, W.C.

SAVORY and MOORE'S PANCREATIC EMULSION. Supplied to the Royal Hospital for Diseases of the Chest. Bottles 2s. 6d., 4s. 6d., 8s.

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SAVORY and MOORE'S IMPROVED FOOD FOR INFANTS. No boiling or straining. "Once tried, this Food becomes a favourite in the nursery, and children thrive well on it."—Medical Times and Gazette. Tins, 1s., 2s., 5s., and 10s. Silver Medal, Paris, 1867.
143, New Bond-street, London.

SIR JAMES MURRAY'S FLUID MAGNESIA.

HOOPING-COUGH.—ROCHE'S HERBAL EMBROCATION, the celebrated Effectual Cure, without internal medicine. Sold by most respectable Chemists. Price 4s. per bottle. Wholesale Agent, EDWARDS, 38, Old Change (formerly of 67, St. Paul's), London.

MOLLER'S COD-LIVER OIL. PURREST NORWEGIAN.
Prize Medals, Exhibitions of 1862, 1865, and 1867.
See "Lancet"—"Dr. Hassall"—"Dr. Alfred Smith"—"Medical Times," &c.
Sold by all Chemists in capsuled bottles at 2s. 6d. per half-pint—Newbury, St. Paul's-churchyard; also of Morson, Southampton-row; Squire, 277, Oxford-street; Schacht, Finsbury-place; Turner, Fleet-street; Darby and Goodeve, Leadenhall-street; and Wholesale of Peter Möller, 32, Mincing-lane, E.C.

INSTANT RELIEF and a RAPID CURE of Asthma, Consumption, Influenza, and Coughs, by DR. LOCOCK'S PULMONIC WAFERS.
Price 1s. 1½d. and 2s. 9d. per box, of all Druggists.

COUGHS, COLDS, ASTHMA, and INFLUENZA are speedily cured by the use of SPENCER'S PULMONIC ELIXIR.
To Invalids, whose ailments are increased in frosty and foggy weather, Spencer's Elixir is a never-failing source of comfort and ease from suffering, enabling them to breathe with freedom during the heaviest fogs and thickest fog. May be had of all Medicine Vendors in the Kingdom, in bottles of 1s. 1½d. and 2s. 9d. each.

DINNEFORD'S FLUID MAGNESIA, the best remedy for Acidity of the Stomach, Heartburn, Headache, Gout, and Indigestion; and as a mild aperient for delicate constitutions.—172, New Bond-street, London; and all Chemists.

TENDER FEET, CORNS, &c. TRY
SALVEO FEDER.
Sold by all Chemists; and at 39, Lamb's Conduit-street.

WANTED,—Left-off Clothes, Uniforms, Furniture, Miscellaneous Property, &c. The highest price given. Ladies or Gentlemen waited on by addressing to Mr. or Mrs. G. HYAM, 10, Beak-street, Regent-street, W.; or, Parcels being sent, the utmost value in cash instantly remitted. Established 1830.

WINTER MANTLES and JACKETS. Just completed, and this day arrived from Paris, a Large Purchase of a well-known Manufacturer's Stock of Velvet Mantles and Jackets, Black Dhuti Cloth, Satarra Cloth, Velvet Nap Cloth, Coloured Velvet Pile Cloth, Mantles and Jackets, all prepared for the present season, and of the highest character as to quality, design, and trimming. These beautiful articles are now ready for Sale, and will be offered much under the original cost.
PETER ROBINSON, 103 to 108, Oxford-street.

WATERPROOF MANTLES, in Shrewsbury Waterproof Tweed, all shades of Grey and Brown, and various new mixtures, prepared for this season, and warranted waterproof.
A size, circular, with hood, from 21s. 6d., more than 50 in. long.
B " " 25s. 6d., " 54 "
C " " 30s. 6d., " 58 "
The Inverness, with cape, from 25s. 6d.,
The Seacoast, with sleeves and hood, from 25s. 6d.
A new Pelisse Shape, with a jacket attached and hood detached, from 25s. 6d.
Also, an extra light make of Mantle, Lined Indiarubber. This will be found impervious to all wet, from 21s. 6d. to 42s.
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The Illustrated Manual of Fashions post-free on application.

REAL RUSSIAN SEAL-FUR PALETOTS.
23 in. to 26 in. deep, 7 gs. to 9 gs.
29 in. to 30 in. deep, 8½ gs. to 11 gs.
31 in. to 32 in. deep, 10 gs. to 14 gs.
33 in. to 34 in. deep, 18 gs. to 20 gs.
All warranted genuine seal-fur, and, having been prepared during the summer months, are much better value than could be now produced.
A priced Illustrated Book of Mantles, &c., sent post-free.
PETER ROBINSON, 103 to 108, Oxford-street.

A MANUFACTURER'S STOCK OF
BLACK AND COLOURED VELVETS, suitable for Dresses and Mantles, the whole of which will be sold during the month extraordinarily cheap.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street, W.

FOR WINTER DRESSES.
ROYAL "KELSO" LINSEY (Registered), This improved article is less heavy in its make and richer in its colourings than any previously introduced.
Patterns free, including all the new tints.—PETER ROBINSON'S.

IN BLACK, WHITE, AND ALL COLOURS.
LYONS FINISHED VELVETEENS, Patterns of this elegant article, now so much worn for Ladies' Jackets and Costumes, can be had at PETER ROBINSON'S, 103 to 108, Oxford-street, W.

FOR WINTER AND TRAVELLING DRESSES.
ASTRACHAN WOOL SERGE, in every new shade of Violet, Navy Blue, Browns, and Grays
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street, W

NEW WINTER DRESSES.
DRAP DE CAIRO—BROCHÉ, This desirable Fabric, introduced for the first time, is remarkable alike for its Elegance, Durability, and variety of Colour, 45s. to 3 gs. the extra Full Dress.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street.

NEW WINTER DRESSES.
PARIS SILK CORDED POPLINS, Just received, a perfectly new Series of rich Colours in this choice material, 25s. 6d. to 2½ gs. Full Dress.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street, W.

FRENCH MERINOES and LINSEYS, Fine Merinoes, all Colours, 2s. 6½d. per yard.
Aberdeen Linseys, all Colours, 13s. 9d., 18s. 9d., to 25s. 9d. the Dress.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street, W.

CHEAP AND USEFUL WINTER DRESSES.
CRETONNE and GORRAN CLOTHS, An endless variety of the above and other new Fabrics, in Plain, Striped, and Chéndé, 10s. 6d. to 18s. Full Dress.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street, W.

"YEDDO" WOOL POPLIN, A grand Collection of Colours in this very Beautiful Fabric, 12s. 6d. to 25s. 6d. the Entire Full Dress. All New Shades.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street.

FOR DRESSING-GOWNS, GARIBALDIS, SHIRTS, &c.
FANCY FLANNELS (all Wool), Upwards of One Hundred Designs, in every variety of Stripe and Mixture of Colour, 1s. 6d., 1s. 11½, 2s. 3d., and 2s. 9d. per yard.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street.

ENGLISH MOIRE ANTIQUES, of Spitalfields Manufacture,
are now being offered, in Black, White, and every new shade.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street, W.

THE EXHIBITION SATIN STRIPE and BROCHÉ SILKS,
price 2 gs. to 3 gs. Full Robe 14 yards.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street.

THE LYONAISE CORDED SILKS, both sides alike, are recommended as the most effective and durable Dress of this Season's Production. All new Colours.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street.

WEDDING COSTUME. A Magnificent Collection of Rich PLAIN and FANCY SILKS, made expressly for BRIDAL wear, has just been received.
Patterns free.—PETER ROBINSON, 103 to 108, Oxford-street.

IRISH LINENS, direct from Belfast, at Manufacturers' Prices.
JAMES LINDSAY and CO.
will forward, carriage-paid on parcels of £5 and upwards, Single and Double Damask Table Cloths, Napkins, Diapers, Family Linens, Sheetings, Pillow Linens, Huckaback and Diaper Towellings, Glass Cloths, Pantry Towels, &c.; Ladies and Gentlemen's Lawn and Cambric Handkerchiefs.
Patterns and Price-list post-free.
James Lindsay and Co., 18, Donegall-place, Belfast.

LILLICRAPP, COURT FURRIER, 37, Davies-street, Berkeley-square, W.
Seal Fur Sealskin Cloaks, Jackets and Coats, Vests for Hunting and Driving-gloves, Astracan Jackets, Velvet Mantles trimmed with various kinds of Fur, Cloth Coats lined with Fur. Carriage Wrappers in great variety. Skins dressed and mounted. Furs taken in exchange.—Lillicrapp, Furrier, by Special Appointment, to H. R. H. the Prince of Wales.

JAPANESE SILKS EXTRAORDINARY, 3000 Japanese Silks, worth 30s., for 19s. 9d.,
in all the new Autumn styles.
Japanese Wedding and Dinner Silks,
originally 2 gs., for £1 8s. 6d.
700, worth £3, for £1 19s. 6d.
Patterns post-free.
CHAS. AMOTT and COMPANY, 61 and 62, Saint Paul's.

BARGAINS in REAL SEALSKIN JACKETS.
CHAS. AMOTT and CO., 62, Saint Paul's,
will SELL during the Week,
20 Real Seal Jackets, as under:—
Lot 1, Full Size, 4½ gs.; worth £8.
Lot 2, 6½ gs.; worth £11.
Lot 3, 10½ gs.; originally 16 gs.
61 and 62, St. Paul's, London.

CHEAP WINTER DRESSES. The following LOTS will be SOLD by CHAS. AMOTT and CO. during Next Week:—
Lot 1. 450 Pieces of Serges, originally 10s. 9d., for 10s. 6d. Dress.
Lot 2. 740 Pieces, originally 2s. 3d., for 1s. 1d. per yard.
Lot 3. 2000 Pieces Aberdeen Winsey, worth 1s. 9d., for 1s. per yard.
Lot 4. 900 Pieces Camlet, worth 2s. 6d., for 2s. 11d. per Dress.
Lot 5. 1200 rich Paris Rep Dresses, worth £2, for 1 guinea.
Lot 6. 500 Pieces French Merino, worth 2s. 6d., for 1s. 9d. per yard.
Lot 7. 250 Pieces Velveteen, 2s. 4½d. per yard; worth 3s. 6d.
Patterns post free.
Chas. Amott and Company, 61 and 62, Saint Paul's, London.

LADIES' VELVETEEN SUITS, 2 gs.
Real Astrakan Fur Paletots, 4 gs.; Velveteen Short Costumes, with Petticoat, complete, 1 g.—HORSLEY and CO., 71, Oxford-street, W. (nearly opposite the Pantheon).

FORD'S Beautifully-fitting BRAIDED JACKETS, for indoor wear, in every variety of Style and Shape, from 7 gs. to 4 gs.; Velveteen, Cashmere, and Fine Cloth, 10s. 6d. to 63s. Ready in all sizes. Illustrations free.
Thos. Ford and Co., 76 (late 42), Oxford-street, London, W.

FORD'S VELVETEEN DRESSES and SHORT-COSTUME SUITS, handsomely Braided, from 2½ gs. to 3 gs. Atlantic Serge Ditto, thoroughly Waterproof, 3 gs. to 5 gs.
Thos. Ford and Co., 76, Oxford-street (opposite the Pantheon).

FORD'S RIDING-HABITS, 3 gs. to 8 gs.
Quality and Fit guaranteed. Riding-Trousers, 21s. per pair. Illustrations of the new Riding Jackets, with Patterns of Cloth and Directions for self-measurement, post-free.—Thos. Ford and Co., 76 (late 42), Oxford-street (opposite the Pantheon), London, W.

SEE THE SEVEN ADVERTISEMENTS BELOW.

CLOSE OF THE PARIS EXHIBITION.
GRANT and GASK
are submitting for UNRESERVED SALE the Exhibition Goods of upwards of 300 of the principal Exhibitors.
58, 59, 60, 61, 62, Oxford-street; 3, 4, and 5, Wells-street, London.

CLOSE OF THE PARIS EXHIBITION.
GRANT and GASK
are submitting for UNRESERVED SALE the whole of the Principal Goods exhibited by
the Lyons Silk and Velvet Manufacturers;
the Merinos and Cachemire d'Ecosse of the best Fabricants of Rheims,
as well as the greater portion of the Goods exhibited from Roubaix, in Reps and all kinds of Woollen Fabrics;
the Organdi Mousselines, Piques, &c.,
of Dollfus, Mieg, and Co.; Gros, Romain, and Co, and other leading manufacturers of Mulhouse;
the Ribbons and Trimmings of St. Etienne;
the Cachemire Shawls of India, Paris, and Lyons;
real Lace Goods of Paris and Brussels;
Russian Sable and all kinds of Furs; real Fur Seal Jackets and Coats;
the Gloves of all the best makers;
the whole of the Paris superb Silk Robes, Mantles, Lace Shawls, and Dresses
exhibited by Maison Gagelin, Compagnie Lyonnaise, Bouillet, Emont, and other Paris Exhibitors;
the superb India and real Lace Shawls, Brussels Point Flounces, and Rich Embroidered Mantles
exhibited in the Pavilion by Hochedé, Blémont, and Co.
All these Goods, having been manufactured expressly for exhibition, are of the highest order of excellence, and form by far the largest and most magnificent Collection ever submitted for sale.
Grant and Gask,
58, 59, 60, 61, 62, Oxford-street; 3, 4, and 5, Wells-street, London.

CLOSE of the PARIS EXHIBITION.
GRANT and GASK
are submitting for UNRESERVED SALE
the superb Brocaded Silks, Satins, Moire Antiques, Gros-grains, Mousselines de Soie, Gazes de Chambery
of the principal Lyons Exhibitors.
Grant and Gask,
58, 59, 60, 61, 62, Oxford-street; 3, 4, and 5, Wells-street, London.

CLOSE OF THE PARIS EXHIBITION.
GRANT and GASK
are submitting for UNRESERVED SALE
the whole of the Rich Black Silks exhibited by the most celebrated French manufacturers.
Grant and Gask,
58, 59, 60, 61, 62, Oxford-street; 3, 4, and 5, Wells-street, London.

CLOSE of the PARIS EXHIBITION.
GRANT and GASK
are submitting for UNRESERVED SALE
The Rich Lyons Velvets, some of which measure 3½ yards in width, of the most celebrated French manufacturers.
Very rich Lyons Black Silk Velvets, 10s. 6d. per yard.
Grant and Gask,
58, 59, 60, 61, 62, Oxford-street; 3, 4, and 5, Wells-street, London.

CLOSE OF THE PARIS EXHIBITION.
GRANT and GASK
are submitting for UNRESERVED SALE
the GLOVES of the most celebrated French manufacturers.
N.B. In addition to the Exhibition Gloves, upwards of 12,000 dozens of Ladies and Gentlemen's best Paris Kid, being the Summer Stock of the above firms, will be sold at 1s. 6d. and 2s. per pair.
Several hundred dozens of the best Paris Exhibition Kid Gloves, slightly soiled, as well as all the Exhibition Swede Gloves, will be sold at 1s. per pair.
Grant and Gask,
58, 59, 60, 61, 62, Oxford-street; 3, 4, and 5, Wells-street, London.

TERMS ON WHICH THE EXHIBITION GOODS WILL BE SOLD.
The price of every article will be marked in plain figures, at an average of one half the cost of manufacture, being the lowest price for cash at the time of purchase or on delivery.
Customers having an account can have goods entered by adding 2 per cent, if paid within three months.
Purchasers wishing to open an account must give a banker's or other reference known to the house.
GRANT and GASK,
58, 59, 60, 61, 62, Oxford-street; and 3, 4, 5, Wells-street, London.
Manufacturers and Exhibitors of the Royal "Palais de Verre," Class 11.

SEE THE SEVEN ADVERTISEMENTS ABOVE.

BAKER and CRISP, 198, Regent-street, are now Selling the Cheapest Lots ever offered in Silks, Dresses, Velveteens, Mantles, Evening Fabrics, &c. Patterns sent free.

BAKER and CRISP'S
CHEAP FANCY SILKS.
21s. to 70s.
Patterns free.

BAKER and CRISP'S
CHEAP EVENING SILKS.
Patterns free.

BAKER and CRISP'S
CHEAP JAPANESE SILKS.
Patterns free.

BAKER and CRISP'S
CHEAP FANCY DRESSES.
1000
Fancy Dresses,
from
8s. 11d.
to
21s.
All the newest materials. Patterns free.

BAKER and CRISP'S
CHEAP BLACK SILKS,
rich, bright, and durable,
20s. to 55s.
Patterns free.

BAKER and CRISP'S
VELVETEENS,
all Colours,
from 21s.
Patterns free.

BAKER and CRISP'S
CHEAP MANTLES,
Furs,
Waterproof Cloaks,
Jackets, &c.—198, Regent-street.

BAKER and CRISP'S
EVENING DRESSES.
1000 Evening Dresses,
from 5s. 6d. to 15s.
Patterns free.

ADDRESS
BAKER and CRISP,
198,
REGENT-STREET.

CATER and COMPANY'S
new Winter Stock of
Silks, Fancy Dresses, Mantles, Shawls, Furs, &c.
Correct styles, best fabrics, most moderate prices.
Useful and Rich Silks (Black and Coloured), 1½ guinea to 5 gs.
Real French Merinoes, 3s. 9½d.; Corded Silk Reps, 2s. 6½d. per yard.
Silk Velvet Jackets, lined throughout with silk and quilted, 2 gs.
French Seal Jackets, 4 gs. Shrewsbury Waterproof Cloaks, 1 guinea.
MOURNING SILKS, Mantles, Made-up Dresses, Millinery.
Janus Cord, Barathea (wide width, patent dye), 10½d. per yard.
Patterns post-free.
1, 2, 3, 4, Finsbury-place; 98, 91, Chiswell-street, E.C.

TURCO POPLINNES (patterns free) and ATLANTIC SERGES, all the New Colours, 12s. 9d. the Dress.
GEORGE BURGESS,
English and Foreign Dress Warehouse,
137, Oxford-street.

BLACK TURCO POPLINNE.—A New Material for Ladies' Dresses. Inexpensive, rich-looking, and durable. 12s. 9d. and 15s. 9d. the Full Dress.
Patterns free.—GEORGE BURGESS,
Family Mourning Warehouse,
137, Oxford-street.

BY SPECIAL APPOINTMENT TO
HER MAJESTY THE QUEEN OF ENGLAND,
H.R.H. THE PRINCESS OF WALES,
H.R.H. THE DUCHESS OF CAMBRIDGE.
247, 249, 251, Regent-street, London.
Messrs. JAY have pleasure in announcing that their Establishment is one of the most fashionable in London for
LADIES' MILLINERY,
MANTLES,
MADE-UP DRESSES,
in Black, Lavender, White, Mauve, and all the neutral tints.
Messrs. Jay therefore request the honour of a visit from Ladies returning to town to inspect their Confections, as well as many other Novelties in Fashion and in Fabric, which Paris and the first manufactories supply.

CRAPES.—The CRAPE sold by Messrs JAY is specially made for them by the best manufacturer, does not spot with rain, is strongly recommended for wear, and for appearance cannot be surpassed.
JAYS'
THE LONDON GENERAL MOURNING WAREHOUSE.
247, 249, and 251, Regent-street.

MOURNING.—Messrs. JAY beg to invite special attention to the DEEP MOURNING DEPARTMENTS of their Establishment, consisting of every article suitable for First and Family Mourning, either made up and ready for wear, or made to Measure from the piece cut by the yard, according to the wishes of the purchasers.
JAYS'
THE LONDON GENERAL MOURNING WAREHOUSE,
247, 249, and 251, Regent-street.

JANUS CORD, an inexpensive and remarkably good texture for Mourning Wear. Janus Cord is cut from the piece in any required length. Dresses of the same material are also kept made up, trimmed with Crape for every degree of Mourning, at about 2½ gs. the Dress.
JAYS',
THE LONDON GENERAL MOURNING WAREHOUSE,
247, 249, 251, Regent-street.

MOURNING.—BLACK SILK SKIRTS, ready made, and trimmed either with or without Crape.
JAYS',
THE LONDON GENERAL MOURNING WAREHOUSE,
247, 249, and 251, Regent-street.

MANTLES.—Messrs. JAY beg to assure their patrons and the public that the reputation of their House for French Mantles is maintained by a succession of novelties, which are constantly imported from the first houses in Paris.
JAYS',
247, 249, and 251, Regent-street.

MOURNING.—Messrs. JAY have some beautiful Black Fabrics for Mourning, specially suited to the present Season, either measured from the Piece, or made-up in Skirts, as the purchaser may elect.
JAYS',
THE LONDON GENERAL MOURNING WAREHOUSE,
247, 249, 251, Regent-street.

EVENING DRESS.—Black Net and Tulle. Messrs. JAY have had specially prepared for this Season a variety of BLACK EVENING DRESSES, which they can confidently recommend, both for their correctness of fashion and economy in price.
JAYS',
THE LONDON GENERAL MOURNING WAREHOUSE,
Nos. 247, 249, and 251, Regent-street.

MOURNING.—Messrs. JAY beg to assure their patrons that they have never before been so well supplied with goods for Autumn wear, and from the fact of the entire stock having been newly purchased direct from the manufacturers at Roubaix, customers will not only have the advantage of selections from an infinite variety of new textures, but of purchasing at almost wholesale prices.
THE LONDON GENERAL MOURNING WAREHOUSE,
247, 249, 251, Regent-street.
JAYS'.

PATTERNS.—BLACK CORDED WOOLLEN TEXTURES for the PRESENT SEASON. New French Fabrics for Mourning wear. Patterns on application,
JAYS',
THE LONDON GENERAL MOURNING WAREHOUSE.

MOURNING.
Messrs. JAY, of the London General Mourning Warehouse, Regent-street,
(one of the oldest firms in England),
have always in Stock the greatest variety of
MOURNING DRESSES,
MOURNING CLOAKS,
MOURNING BONNETS,
and all other incidental Millinery, suited to any period or circumstance of mourning.
Prices unequalled for cheapness are the characteristic of each article.
JAYS',
THE LONDON GENERAL MOURNING WAREHOUSE,
247, 249, and 251, Regent-street.

MILLINERY.—Messrs. JAY beg to invite their customers to this long-recognised branch of their business. The Millinery, in Black, White, and Mauve Bonnets, will be found this season equal in taste and fashion to that of the first Modistes Parisiennes.
JAYS',
247, 249, 251, Regent-street.

CLOSE OF THE PARIS EXHIBITION.
SEWELL and CO. are now offering for Sale a lot of Foreign Silks much under value; also the Stock of a Lyons manufacturer, purchased at a discount of 37½ per cent off. All these Silks are in perfect condition.
Compton House, Frith-street, Soho-square, London, W.

EMBROIDERY AND FOREIGN LACE GOODS.—SEWELL and CO. have for Sale the Stock of A. Cartier of Paris, consisting of Handkerchiefs, made-up Lace Goods, Brussels, Valenciennes, and other Laces, at less than half price.—Compton House, Frith-street, Soho-square, London, W.

PARIS EXHIBITION, 1867.
Brilliantly-Coloured French Chintzes,
Magnificent Cretonnes.
Gold Medal German Table-Linen and Sheetings.
SEWELL and CO. are now offering the above,
Compton House, Frith-street, Soho-square, London, W.

HUDSON'S BAY SALE.
REAL SEALSKIN JACKETS.—SEWELL and CO. have for Immediate Sale several hundred Real Sealskin Jackets of first-class quality, in all sizes and at very low prices.
Compton House, Frith-street, Soho-square, W.

REAL SEAL FUR JACKETS,
and other Choice Furs,
suitable for Christmas Presents,
at POPE and PLANTE'S, 4, Waterloo-place, Pall-mall.

FURS.—E. ALLEN, Furrier, 239, Regent-street, W. (corner of Princes-street), respectfully solicits an inspection of his new and rare assortment of Furs of every description. Fur, Seal, and Astrican Mantles, £8 to £20 each. Established 20 Years.

AUDLEY HOUSE.—SMITH, DURRANT, MAYHEW, and CO. are now showing their New Goods for the present Season, consisting of all the fashionable Materials for Winter Dresses, Silks, Shawls, Mantles, Furs, Hosiery, Gloves, &c. They have much pleasure in being able to announce that their Stock of Calicoes, Longcloths, and all Cotton Goods are now down to the old prices, previous to the American War, and purchasers for Work Societies, Clubs, and Charitable purposes, will find greater advantages this season than have been offered them for many years past.—50, 50, and 60, South Audley-street, Grosvenor-square, W.

BONNETS.—MARKS and GAVELL returned from Paris with their Elegant Guinea Bonnets, the same models as shown in the Paris Exhibition.—61, Regent-street, near Swan and Edgar's. Show-room. No shop.

PARIS EXHIBITION.—GREAT SALE at KING'S, 243, Regent-street, of
Rich Lyons Silks,
Satins,
Velveteens,
Silk Reps,
Silk Winceys,
Silk Serges,
Real Seal Fur Jackets,
Velveteen Jackets,
Shawls, &c.
Patterns sent to all parts post-free.
Address to King and Co., Regent-street, London.

PATTERNS POST-FREE.
PARIS EXHIBITION — CLASS 13.
Rich Lyons Fancy Silks,
£1 1s. to £3 3s. the Full Dress.
Rich Lyons Black Silks,
£1 1s. to £3 3s.;
Rich Lyons Satins,
£3 3s.;
and Rich Lyons Silk Velvets,
£3 10s. the Full Dress.
Patterns post-free.—Address to KING and CO., Regent-street.

PATTERNS POST-FREE.
PARIS EXHIBITION — CLASS 16.
Silk Reps de Roubaix,
6s. 6d. the Full Dress.
Silk Winceys,
10s. 6d.;
Silk Serges,
10s. 6d.;
Wool Poplins,
12s. 6d.;
Lyons Velveteens,
£1 1s.;
and Gase de Chambery, for Evening wear,
5s. 9d. the Full Dress.
Patterns post-free.—Address to KING and CO., Regent-street.

PATTERNS POST-FREE.—A
BANKRUPT'S STOCK of JAPANESE SILKS, for Evening and Walking Dresses,
£1 1s. the Full Dress,
at KING'S, 243, Regent-street.

PATTERNS POST-FREE.
CIVIL SERVICE ASSOCIATION.
Ladies are respectfully informed
that the cheapest
Co-operative Store in London
is KING'S, 243, Regent-street,
for Silks, Fancy Dresses, Mantles, &c.
N.B. All Goods sold at 5 per cent profit,
and no discount allowed.

PARIS EXHIBITION GOODS,
Amongst the many very extensive purchases made by PETER ROBINSON
THE PATENT CRAPES
form an important item, being the whole of those exhibited by one—the most eminent maker.
They are the most perfect specimens of Crape ever shown, and possess the advantage of standing the Damp Weather.
Peter Robinson, Family Mourning Warehouse,
256 to 262, Regent-street, London.

PETER ROBINSON'S
FAMILY MOURNING WAREHOUSE,
256, 258, 260, 262, Regent-street.
Four houses (in one) devoted exclusively to the sale of Mourning.
Experienced Dressmakers and Female Assistants sent to take Orders within 200 Miles from London free of any charge.
The most reasonable prices are charged, and every article warranted.
Illustrations of Mourning Fashions and Patterns and Estimates free per post.

AT PETER ROBINSON'S MOURNING WAREHOUSE, Regent-street.
FASHION IN EVENING DRESSES, for DINNER and BALL COSTUME.
IS A SPECIAL NOVELTY, Peter Robinson would invite attention to the "Marie Antoinette" Dress, composed of Tulle and Lace, which is a slightly modernised reproduction of the mode of the "Louis Seize" period, and he is sure that in it will be seen novelty at a moderate price,
the three qualities always kept in stock being 35s., 55s., and 75s.,
though it can be made to order of more or less costly materials.
Also, an immense variety of Parisian made-up Dresses, ranging from 10s. to 50s.;
and Tulle, Grenadine, and Lace, from 2s. to 10 gs.
Peter Robinson having devoted two large rooms entirely to the Dinner and Evening Dress Department, respectfully solicits Ladies to visit and inspect one of the largest and best collections in London.
256, Regent-street.

As a Guarantee for Wear, the Maker's Name is woven in the Piece.
SUPERIOR BLACK SILKS,
by Tapissier, Bonnet, and other celebrated Makers.
PETER ROBINSON would invite the especial attention of Purchasers to the superior makes and qualities of his BLACK SILKS,
and the very reasonable prices at which they are sold. He can supply good useful Black Silks from 45s. to 70s. the Full Dress, and superior and most enduring qualities from 3½ gs. to 10 gs.
Patterns free.—Address, Peter Robinson, 256, Regent-street.

THE FASHIONABLE NEW MATERIAL,
THE NEW BLACK WORSTED POPLIN, from 18s. 6d. to 30s. the Dress,
similar in make to the Irish Poplin.
A most serviceable and inexpensive Dress.
Patterns Free.
PETER ROBINSON'S Mourning Warehouse, Regent-street.

A GRAND DISPLAY OF NOVELTIES IN
MOURNING MANTLES and MILLINERY,
at PETER ROBINSON'S,
Court and General Mourning Warehouse,
256 to 262, Regent-street.

INEXPENSIVE MOURNING, as well as the Richest Qualities, can be supplied by PETER ROBINSON,
upon the most advantageous terms to Families.
The Court and Family Mourning Warehouse,
256, 258, 260, 262, Regent-street, London.

SUPERIOR CRAPE.
THE IMPERIAL UNSPOTTING CRAPES are far richer in appearance and much more durable than the ordinary makes. These are finished by the Manufacturer expressly for
PETER ROBINSON'S Court and General Mourning Warehouse, Regent-street.

SILKS! SILKS! SILKS!
(Patterns post-free.)
JAMES SPENCE and CO.,
76, 77, and 78, St. Paul's-churchyard,
respectfully announce their NEW AUTUMN STOCK ready for inspection. The following are specially noted:—
20 in. wide Black Glacé Silk, 1s. 11½d., 2s. 6d., 2s. 9d., and 3s. 11d. per yard;
24 in. wide Black Glacé Silk, 2s. 11½d., 3s. 3d., 3s. 6d., and 3s. 9d. per yard, upwards.
A large Parcel of Satin Stripes, both sides alike, in all the new Colours, 20 in. wide, £1 10s. the Dress.
Mantles, Jackets, and Shawls in all the new Materials and latest Designs.

WINCEYS! WINCEYS! WINCEYS!
Real Aberdeen,
JAMES SPENCE and CO.
respectfully announce their NEW AUTUMN STOCK ready for inspection.
Patterns post-free.
All the New Shades and Mixtures (including the Compound, Grampian, and Clan), at the following prices:—
14½d., 16½d., 18½d., 21½d., 25½d., 2s. 3½d., 2s. 6½d., and 2s. 11½d. per yard, upwards.
James Spence and Co., Silkmercers, Drapers, &c.,
76, 77, and 78, St. Paul's-churchyard, London.

WEST CENTRAL
MOURNING WAREHOUSE.
FAMILY MOURNING of the best description at the most moderate prices.
DRESSES ready-made in all the various materials to suit every degree of mourning.
BLACK SILKS (wear guaranteed), 2 gs. the Dress of 14 yards.
VELVETEENS.—The richest makes, 21s. the Dress; or in COSTUMES, in a variety of styles, 2½ gs.
MANTLES and JACKETS.—The newest designs in Fancy Cloths, Sealskins, Astrican, &c.
MILLINERY and DRESSMAKING in all its branches.
Any style of Dress made at a few hours' notice.
ORDERS carefully and promptly executed.
Patterns free.
HOWITT and COMPANY, Albion House,
276, 277, 278, 279, 280, High Holborn.

JOHN HARVEY and SON, 69, Ludgate-hill, are showing and invite an inspection of their NEW WINTER SILKS, for Dinner and useful Dresses.

JOHN HARVEY and SON, 69, Ludgate-hill, are showing and invite an inspection of their Wool Serges, Poplinettes, French Merinos, &c. Serge Costumes from 21s.

JOHN HARVEY and SON, 69, Ludgate-hill, have an excellent variety of Colours in Silk and Wool Epingle Reps, from 21s. to 42s. the Dress.

JOHN HARVEY and SON, 69, Ludgate-hill, are now showing for the Season a quantity of excellent Cloth, Velveteen, and Imitation Seal Jackets, 30s. each.

MEETING OF PARLIAMENT.—Mdme. PARSONS, having just returned from Paris, begs to invite the attention of Ladies visiting town to her recherché Stock of Millinery, selected from the first Parisienne Houses; also her own particular Guinea Bonnet and Sealskin Hat. Hats for Riding, Walking, and Driving.—93, Regent-street; 36, 37, 37, and 38, Burlington-arcade.
London, Nov. 4, 1867.

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REPORTS ON THE CLASSES.

PREPARED BY ORDER OF THE COMMITTEE OF COUNCIL ON EDUCATION.

CARPETS, TAPESTRY, AND OTHER STUFFS FOR FURNITURE.—CLASS 18.

BY M. DIGBY WYATT, ARCHITECT, AND JUROR FOR CLASS 15.

THERE are two distinct aspects under which all carpets present themselves generically—the one industrial, and the other artistic. The industrial aspect comprises the theory of manufacture, and the relations of the fabric to comfort, durability, and economy. The artistic aspect takes cognizance of the greater or less beauty of the design which adorns the carpet. That design may generally be regarded as falling into one of two categories—viz., firstly, into what the French call a "fond," or unobtrusive basis, calculated to serve as a background, from which furniture may be satisfactorily detached; or, secondly, a picture complete in itself, and upon which the eye may rest with complacency, provided that the "ensemble" or whole effect of the design can be embraced from a single point of view. Such being the general outline of the analysis of the subject, as it presents itself to my mind, I propose to adopt its various headings as the skeleton upon which it may be well to hang the various remarks upon detail which will constitute the bulk of the present report.

Beginning, then, with the industrial aspect of the subject, it will be found that in all countries the original and commonest description of carpet differs but little from the ordinary coarse woollen cloth of the nation. In the East, the cradle of carpet manufacture, the "suttringee," or common cotton rug, or small carpet, is an "institution" throughout India, as not very long

THE JAPANESE WOMEN IN THE LATE PARIS INTERNATIONAL EXHIBITION.

ago the "Kidderminster" was with us. The first fundamental improvement upon the simple weaving together of a cotton or woollen warp and weft consisted in the doubling in substance of the woollen, or more commonly worsted, warps; and the combination with them of wefts in various coloured yarns of wool. Then came the introduction, as backing (out of sight), of linen and hempen yarns, of closer texture and greater strength than can be obtained in wool. Varieties of these simple operations form what are known in commerce as "Kidderminster," "Venetian," and "Scotch" carpeting; and of these all countries make more or less—our own trade in this cheap class of goods being very large. They are principally made in Yorkshire, Durham, and Scotland; the trade of Kidderminster itself being now confined to a superior class of goods altogether. Of common goods the Exhibition contains very few samples from any country, the competition amongst the exhibitors ranging almost exclusively between those engaged in producing the highest class of carpets, such as involve the execution of elaborate designs in the most durable shape. The next stage of elaboration in manufacture consists in making both the warp and weft in very strong materials, as of flaxen or hempen yarns, and of interweaving with them tufts or short lengths of wools of various colours, known in France as *moquettes* so as to make up a thick woollen face, tied in by the stronger yarns. Once safely tied in, it is, of course, possible to cut the ends of the doubled up wools without fear of their pulling out from their backing, and these, pressed down and trodden back by the foot, spread and acquire thereby an additional consistence. This it is which makes all the common class of Turkish, Indian, and Algerian carpets so very durable and agreeable to the tread. Simple as this process may appear, it has enjoyed as wide and uninterrupted a sway as almost any other in the history of industrial art.

The original carpets which the Crusaders brought with them on their return from the East, to gladden the eyes of the faithful with samples of the skill of the "infidel," were made in the very same kind of loom as that which may now be seen in the machinery gallery of the Exhibition, with a half-worked "Smyrna" rug still bound upon its warp. This rug is the true type of the hand-worked tufted carpet, whether it take the shape of a perfect, true Axminster in England, of the celebrated Royal manufacture of the Savonnerie in France, of the finest India or Persian carpet, or the ordinary Smyrna, or, as it is commonly called, the Turkey carpet of commerce. The operation of manufacture may be briefly described as follows:—A strong warp of string is stretched, generally vertically, from beam to beam of the loom, each alternate string being "harnessed" to the heddles of the loom. Guided by a drawing, the divisions of which correspond with the width of any given number of warp-strings, intersected at right angles by a given number of weft-strings, the weaver proceeds to wind in and out between the warp-strings differently coloured tufts of wool, in such wise as to leave the ends of the tufts sticking out at right angles to the plane of the warp. Having twisted in a row of tufts all across the loom, he works with the treadle the harness of the loom, raising the alternate strings so as to form the passage between the threads which the weaver calls his "shed." Through this he throws his shuttle, carrying with it a strong weft-string. By depressing another treadle, he raises a different set of warp-strings, so as to form another shed, through which he throws back the shuttle to its original position. He thus weaves a few strokes, and then proceeds, with what is called the "batten, or lay," to beat back the web and warp strings which he has woven together, so as to make them hold in the woollen tufts as tightly as possible. When that has been evenly done for the whole width of the carpet, he recommences twisting in between the warp-threads another set of woollen tufts, which he in turn secures by interweaving and beating back; and so with infinite care and patience he labours on until the whole width and length of the original warp-strings are covered with this woollen tufting. The surface is then trimmed over with large shears, in order to cut back to one uniform level any rebellious tufts which may raise their heads above their fellows. Such is, was, and probably long will be, the process of manufacturing the most beautiful carpets which have ever been made, or which, as far as I can suppose, ever will be made. The defects of the process are obviously its tediousness, and consequent great cost; nevertheless, the Exhibition is full of specimens of such work of the most elaborate description; and these made not only in countries such as India, Turkey, Russia, Algeria, and Holland, where labour is cheap, but in France and England, where machinery is all but human and skilled labour all but priceless. In the former of the two last-named countries the carpets of the Savonnerie and of Aubusson, and in the latter that of Mr. Lapworth, exhibit elaborate processes of hand-working in their highest perfection, next always to the one magnificent specimen sent by the Minister to the Maharajah of Cashmere, and exhibited in the Indian department.

One of the Tunisian carpets and one of the Algerian also stand out in superior excellence before the bulk of the Turkey carpets, which, in point of technical execution, are of a well-sustained high order of merit.

The original process of simple weaving having failed to ensure sufficient durability to the fabric, since wool trampled over in the direction of, or transversely to, the twisted staple of the wool is readily trodden out and unravelled—its own elasticity helping—it was found that the same staple trodden back at right angles to its length was one of the most durable substances possible, in proportion to its bulk. To ensure this condition of weaving by a mechanical instead of by a solely hand-worked process, such as that last described, what is known as "Brussels" carpet-weaving was devised—that is to say, the first operation of the previously well-known velvet-weaving process was applied to the manufacture of carpets. For the sake of simplicity, let us suppose that the carpet is to be produced in one colour, without any figure upon its surface. The worsted warp, as well as a hempen or linen warp, having been harnessed to the "treadles" and "heddles," as for common weaving, and the passage for the shuttle formed, the weaver throws over, transversely, a hempen or linen shoot, making by throws following the alternate action of the treadles a coarse *canvas* starting. He then begins to interweave his worsted warp, and at this stage the special peculiarity of his process begins. The difficulty is to raise up the worsted warp so as to form the little loops of wool noticeable on the face of a Brussels carpet. This is done by forming a "shed" or shuttle-way between the woollen and the linen warps, the former being raised and the latter depressed. At this stage the weaver inserts a small iron rod into the "shed," or shuttle-way, and presses it home towards his breast. He then works his treadles so as to draw down the worsted warp and raise up the linen one, so confining the iron rod and forming a new shuttle-way. Across this he throws his shuttle, and then again raises the woollen warp. Another iron rod is inserted, and similarly woven in until some half-dozen are confined. The weaver then withdraws the one nearest him for re-use beyond those furthest from him, which are left in to keep the work steady until sufficient weaving is done to prevent any risk of the loops pulling out. Care is of course taken, by beating a sort of strong comb (the "batten") back towards the breast of the weaver, to keep the work well closed up and compact as it goes on. In this way a plain Brussels carpet may be made; but the problem is much complicated when patterns with several colours are required. For each separate colour a separate worsted warp is indispensable; and it is obvious that lengths of each thread of the warp must be used, varying with the proportions of each colour brought up, by looping, to the surface of the fabric. Each thread therefore requires to be wound, at the end furthest from the weaver's "breast-roll," round a separate bobbin, weighted so as to give it a slight tendency to rotate in its frame in a direction contrary to that in which it would be moved by pulling up the thread to form the loop. This gives an equal amount of tension to the woollen warp-threads, whether they be much or little used in the formation of the pattern. Of course all the bobbins, with the yarns of the same colour, are fixed upon the same frame; and the carpet is generally spoken of as a two-frame, three-frame, four or five "frame," or "ply" carpet, according to the number of such separate frames or sets of coloured warps requisite for the development of the pattern. The mounting of the loom is now generally effected on the "Jacquard" system, the beautiful automatic operation of which raises for every stroke of the shuttle and insertion of the iron rods just those threads from each frame which should be brought to the surface in order to form the pattern with proper loops. Some idea of the complication arrived at at this stage may be formed from a knowledge that to weave a good figured carpet, yard wide, involves the use of about 1800 bobbins and threads for each web.

The conversion of this from a hand-worked process into a power-loom process is one of the greatest triumphs of modern ingenuity; and it is most honourable to English ingenuity and perseverance that every difficulty has now been overcome in this country, and that Kidderminster, Durham, and Glasgow now manufacture Brussels carpets for all the world. Strange to say, however, in spite of the general consumption of the article, I scarcely observed a "Brussels" carpet in the whole Exhibition.

To convert a Brussels carpet into a "pile" carpet, all that is requisite is to borrow the second operation from velvet-making. This consists in ploughing a groove into the surface of the iron rods around which the loops are twisted, and taking care that the rods are so inserted as to keep this groove always furthest from the back of the carpet. A sharp cutter run along the line of this groove from side to side at once releases the rod and forms the cut pile. The surface is subsequently trimmed, or shorn, to make the whole perfectly true and level. A carpet so woven becomes what is commonly known as a Jacquard woven cut-pile carpet, and this description of carpet forms the staple of the French and English goods sent to the Exhibition. I shall presently note the leading exceptions. In 1855 everyone interested in such machines was delighted with the loom for manufacturing Brussels and velvet-pile carpeting which was exhibited by Mr. Wood, of Monkhill, and which was as perfectly self-acting as any such machine could be conceived to be.

The next stage in the working out of carpet-making machinery was the endeavour to get rid of the complicated sets of frames with infinite bobbins for multiplied colours. This has been attempted in two ways, one unsuccessful, the other successful. The former by attempting to print and "through dye" a plain tufted fabric so as to cover it with various coloured patterns. This failed because it turned out to be impossible to more than superficially dye the wools, if the fabric was of sufficient closeness of texture to be good and durable in wear. The successful process, in which, under the auspices of Sir Francis Crossley, an immense trade is carried on at Halifax, consists in translating upon paper the finished pattern as it should appear, when the carpet is laid down, into another pattern representing what would be the pattern if all the threads of which the finished carpet would be composed should be pulled out and laid flat side by side. Blocks are then cut to correspond with this translation, and uncoloured woollen warps of a corresponding number of threads are then laid down, and printed by means of the blocks. The subsequent operation of weaving up the printed warps restores the translation to the original, by absorbing and throwing to the back of the fabric the redundant lengths of different colours which have of course been provided for in the translation. Either Brussels or velvet-pile carpets may of course be made by this process, and such carpets are generally known as "printed warp" carpets. The chief alleged drawback to these carpets is that the printing of the woollen threads is not supposed to give them quite as good or solid a colouring as when they are dyed in the yarn. The chief alleged drawback to the Jacquard pile carpets is that they are apt to run short in the staple.

The four great tests of excellence in both Brussels and pile carpeting are—first, the length of the loop, or pile; second, the quality of the woollen yarns; third, the number of threads to the inch in width; and, fourth, the compactness of weaving at the back, so as to perfectly tie in the loops and cut filaments which form the pile. If the pile, or tufts, can be made perfectly secure from pulling out in wear, the longer they are, or rather the higher they rise from the back of the carpet, the greater will its durability be. It is much easier to tie in "moquettes," or little tufts of wool plaited in by hand securely (because the threads of the tuft are already intertwisted and matted together before tying), than any loop or tuft formed from a wool or worsted which has been spun, or has once been brought into a state of even moderate tension: since the latter operation injures the natural tendency of the fibre to interlock. That is why the hand-worked Turkish and Indian goods can be made so extraordinarily lasting. Among the Algerian rugs in the present Exhibition was one I examined with the British juror, which, for fulness and length of pile, combined with admirable strength in the tying in, was, although of rough appearance, from imperfect shearing, an admirable model of what such a carpet should be in texture and mode of manufacture.

The next great stage of improvement in carpet-making aimed at the suppression of the complicated "frames," or "plys," for each separate colour, and yet the employment of wools "dyed in the yarn."

This has been achieved by the adoption of one of the most brilliant ideas which ever entered the head of a manufacturer.

Hitherto, we have seen all attempts at carpet-weaving with a pile made either by inserting tufts of wool or by bringing the warp-threads into loops to the surface for subsequent cutting. The process I am about to describe goes upon the entirely different system of attaching the tufts or cut-pile to a strong weft-thread, and then so interweaving this tufted weft-thread with linen or hempen warp-threads, as to make a compact fabric, with all the woollen pile on the surface. If it is difficult to do this in a plain-monochrome fabric, how much more difficult must it be to so carry it out as to produce a figure of various colours upon the surface? The present Exhibition contains many attestations of the successful resolution of the problem by Mr. James Templeton, of Glasgow.

To this gentleman I applied for some special information as to his most ingenious invention, and received a kind and most modest reply, in which, after doing full justice to contemporary makers of carpets by other processes, he goes on to state:—"You are aware that the Axminster carpet, first made in the town of Axminster, was an imitation, and was made or woven in the same manner as the Syrian or Turkey carpet—that is, by tufting or knotting on to a vertically placed warp the yarns which form the surface and pattern. This was, and still is, a very tedious process. For ten years previous to 1839 (in which year I patented the invention of making or weaving Axminster carpeting by a new process) I was a shawl manufacturer in Paisley, and, amongst other goods, made a great many of what are termed chenille shawls, the process of which was to weave a pattern on a warp, the warp having been spaced in the reed according to the depth or thickness of pile required. This first cloth was then cut between the spaces into shreds, and then, these shreds having been twisted into a spiral form, they were woven on to another warp, marks for the weaver's guidance having been woven in the first weaving to enable him to place the shreds so as to bring out the complete pattern in the second weaving. The idea occurred to us (one of my weavers and myself) that, if cloth could be so woven as, when cut into shreds and not twisted to form chenille, but left free, so that the two cut edges of the shred might collapse and form a pile, or fur, as we term it, it would, when rewoven on to another warp or surface, produce a velvet, a pile, or an Axminster surface. This was accomplished by a certain mode of gauze-weaving, and a patent was taken out for it. In protecting this patent, in 1847, on a trial in which we got a verdict on all the issues, the Judge (the late Lord Robertson), when re-examining a witness, smartly remarked, after he had seen the difference between our products and those of our opponents (our opponents wished to make out that ours was only the old chenille process), 'Oh! I see—this new fabric (or shred) has its backbone where it ought to be, and the chenille has its backbone in its middle.' I mention this circumstance to help you to recognise the difference between the two; but, if you take any narrow strip of cloth and twist it, you will at once see what was meant. The chenille or twisted strip or shred becoming spiral, gave a pattern on both sides of the cloth, the cut edges standing out, when twisted, in every direction; while our backbone, with its vertebræ, formed a ready-made pile for throwing on one side of the cloth only.

"The foregoing will give you an idea of the origin and basis of the structure of our patent Axminster carpeting. Great were the difficulties met with in prosecuting it to a successful issue, involving too great a variety of gradual improvements to describe in detail in the compass of a letter (or of such a report as the present). Every change or new improvement in manufacture has its difficulties: this one certainly had its share, and I do not believe that any consideration or remuneration would induce me to fight the first three or four years' battles over again. By perseverance, however, in the course of years, prejudice was disarmed and difficulties gradually disappeared or were overcome. By aiming at superior fabric and pattern, employing first-class designers and workmen, and also by providing the best machinery for the various processes, step by step our manufacture has attained the position it now occupies.

"I need hardly remind you that there was a time when first-class artists could hardly be induced to prepare patterns or designs for textile fabrics.

"In 1851 we induced Mr. E. T. Paris to give us a design for a medallion carpet and another for a rich table-cover, both of which we then exhibited; and some years ago you yourself were kind enough to prepare for us a series of most suggestive sheets of sketches. More recently still, your professional occupations engrossing you so very much, Mr. Owen Jones has favoured us with carpet designs, several of which are now 'on cloth' at the Paris Exhibition. I am glad to know that now other manufacturers of textile fabrics, carpeting, and other figured goods, employ superior talent, and sometimes even genius, for these designs (and, from the superior art-education of foreign manufacturers and their workmen or designers, unless this is done to a still greater extent we may be left in the background with regard to many of our textile fabrics) in which, undoubtedly, taste and experienced judgment are as essential to perfect commercial success as the material, even, of which any textile fabric may be made."

Mr. Templeton's goods, of which there are many first-rate specimens in the Exhibition, some of which have been manufactured for other exhibitors, have now taken a firm hold in public estimation, and his trade is most extensive.

Other British makers are now bestirring themselves in the same direction; and, as Mr. Templeton's patent rights become public property, there is no doubt that the Kidderminster manufacturers will "take kindly" to the chenille process; and, indeed, already Messrs. Brinton and Lewis, with their "Indian Axminster," tread closely on Mr. Templeton's heels.

What the future of the carpet manufacture in France and other countries will be it is as yet very hard to prognosticate. In simplification of process with elaborate results they are at present far behind Templeton, Crossley, and Brinton.

Before leaving the subject of the technical processes of various countries, I should note that, although carpets are now made at Aubusson with velvet pile, the original and special process is a hand-worked one, analogous to that by which Gobelins and Beauvais tapestries are produced. The main difference consists in the texture of the woollen yarns.

I now turn to that which will probably prove the more interesting portion of my subject—its artistic aspect. It is, no doubt, good to make a warm, comfortable, durable carpet; but it is something little less essential to enjoyment to make it beautiful also. To do the latter, happily, entails the loss of no single excellence aimed at by those who would attain to the former; and, as far as one's experience in the past extends, it is pleasant to remember that the most beautiful carpets have been also amongst the best and most lasting. Too often in industrial art the beautiful perishes while the ugly endures, but this has been by no means the case with carpets.

Before instituting any comparison between two bodies in movement, it is well to note the starting-point of each, or rather their relative position at a given point of time. Let us assume as a good point of departure for the comparison of the changes which a period of twelve years has wrought in the artistic aspect of the French and English carpet manufactures, the condition of both at the last Parisian Exhibition in 1855. Mr. Richard Redgrave, than whom no one is entitled to speak with more weight, from his long and close observation of cause and effect in the progress of international manufactures, in the last-mentioned year made a careful record of what he then observed, and found much reason to condemn the irrational style of the majority of the most highly premiated of the French designs.* He thus described a leading Parisian carpet in 1855:—"A mossy border, powdered with daisies, margins a square space, wherein are clustered, as in a parterre, flowers of the largest size and gaudiest hues. From among these flowers grow up funereal yews, and through the openings of their interweaving branches are seen vistas of sunny landscapes, lakes, mountains, and clear blue sky. Above, the stag like branches of the trees twine into fantastic compartments, in which, or through which, are seen pictured in the upper air manufactories, with their tall chimneys, steam-engines, implements of agriculture and of art, and groups of the products of industry. Then garlands of flowers dangle upwards far into the canopy of sky, on which, as it were, in the very vault of heaven itself, are heaped together grapes, bagpipes, vats, melons, pipes and tabors, shoaves, fiddles, pitchforks, and coats of arms. This, strange as is the description, is a carpet worked for the city of Bordeaux at a great expense; and this, too, designed by one who has received many medals—the manufacturer being honoured by the jury with a first-class medal also. (Mr. Redgrave had previously described some other equally wonderful specimens of extravagance in carpet design.) These are taken almost at random; notes of many other important works are but repetitions of the same characteristics. What wonder, then, that within the circle of the panorama nineteen twentieths (this is said advisedly) of the carpets there displayed—carpets for the household, not for the palace—were equally treated as pictures, very many of them consisting of flowers combined with landscapes; and, of course, as being made in breadths, repeating such pictures many times over the same floor."

Such was no extraordinary illustration of the current faults of French carpet design as they appeared to a cultivated observer in 1855—one, however, keenly alive to the manufacturing skill and graphic power which the execution of such difficult productions may be said to have wasted. The English goods exhibited on the same occasion, if less ambitious, were more reasonable; if involving less draughtsmanship in the preparation of the designs, they were certainly carried out in quieter and better taste. This wise restraint may have been partly due to our scarcely possessing at that date the manual dexterity of the French *dessinateurs pour etoffes;* but in a yet higher degree may be attributed to the enunciation of sound principles of industrial design, which was made in this country at periods immediately anterior, and subsequent, to the Exhibition of 1851, which gave an extraordinary impulse to popular as well as professional taste. These wholesome doctrines, thanks to Owen Jones, Mr. Redgrave himself, and to others, took good root, and, after sundry struggles, fructified. To them, and to the practical common-sense of many of our best manufacturers, we are indebted for the great improvement manifested by the English carpets of 1855 over those shown in 1851, and by the English carpets of 1867 over those of 1855. Writing in the last-named year, Mr. Redgrave says:—"In England the battle of principles has been fairly fought, and is nearly won, for, while our inventions for printing carpets, either in the piece or in the warp, have placed unlimited decorative means at the command of the manufacturers, there is evidence of a more restrained use of these means than formerly was seen even in woven carpets, these having at the same time been greatly and visibly improved in taste and in true principles of decoration."

Thus it would appear, on the testimony of one well able to judge, that, although the balance of dexterity preponderated in 1855 in favour of the French, that of correct taste was clearly inclining towards the English. In the present Exhibition, with still greater certainty, the same may be averred; but with the important distinction that the progress of the English in the direction of good command over both colour and form in the ready adaptation of ornament to any given set of conditions has been much more rapid than that of the French towards sobriety and prudence in the class of patterns they use, or rather abuse, for the enrichment of their most elaborate carpets. If we except one or two extraordinary errors in point of taste made by isolated English exhibitors, the productions of the whole of the residue may be accepted as free from any serious reproach; while in France designers and manufacturers of the greatest eminence, even those who direct Imperial establishments, continue to perpetrate clever excesses in all directions—excesses of so flagrant a nature as to be irredeemable by any amount of pictorial

* Mr. Redgrave on "Design as Applied to Manufactures." Reports to Government on the Paris Universal Exhibition.

skill. It is, in fact, from the superabundance of pictorial facility that most of what is reprehensible in design arises.

There is no class of products of industry more difficult to do justice to in international exhibitions than carpets. Sufficient space can never be afforded for their display as they will be used, and they have consequently to be hung up and shown as pictures. Now, as it may be looked upon as a fundamental principle that no picture could make an agreeable carpet; so, likewise, it may be conceded that no good carpet can make a satisfactory picture. The consequence of this vicious system of exhibition is that the greatest possible temptation is offered to the manufacturer competing with his fellows to depart from what is fitting for a carpet in order to make his carpet look a little better when exhibited as a picture. I would not go so far as to attribute to this all the family of bad pictures presented by the florid carpets of the Exhibition; but it certainly tends to their retention long after they have received their *exequatur* at the hands of the "faithful in art." The chief reasons why what is admissible in a picture, or, with certain differences, in mural decoration or paper-hanging, is inadmissible in a carpet (or, indeed, in any form of ornamental flooring), may be briefly summed up thus:—

First. The varying sources of light usual in an apartment falsify any attempt at chiaroscuro in the carpet, while, without more or less light and shade, pictorial representation is impossible.

Second. The effect of lineal or aerial perspective, or even of undulation, runs counter to the sense of security which should be assured by the surface upon which the foot is planted.

Third. There are but few natural objects suitable for representation pictorially upon which it would be agreeable to tread; and it is impossible to divest the mind of a certain sense of impropriety in trampling even upon the representation of what it would be painful to tread upon in reality.

Fourth. The better the picture the more annoying any soiling of the surface upon which it is portrayed becomes; and an uncomfortable nervous apprehension takes the place of the free and unrestrained use of what should be a comfort rather than a fret.

Fifth. Carpets require to be traversed in all directions; the point of view can never, therefore, be fixed. It is, of course, a fundamental necessity in pictorial representation that the position of the spectator of what is represented should be predetermined, and the only proper point of view for the picture should correspond with such pre-supposed position. As the point of view of a carpet can scarcely ever be fixed, it consequently becomes an improper plane upon which to project pictorial form.

Sixth. To properly see and enjoy a picture the spectator should have free liberty to retire from its surface until his eye is able to comprehend the whole at a glance, and then to approach, in order to be able to examine the careful reproduction of detail. In the case of a picture delineated on the surface of a carpet such a liberty can very rarely exist, since the eye of the spectator can scarcely ever be withdrawn from it more than about six feet without looking at it at such angles as to produce rapid foreshortening and a consequent falsification of relative dimensions in the objects portrayed.

Such being a few amongst the many good reasons which exist why a carpet or any other ornamental floor or floor covering should never be a picture, it is strange that throughout the Western world, from the classical ages to the present, in the form either of mosaic, tarsia, majolica, stone or marble inlay, or embroidered or woven carpeting, there has been an almost incessant effort to produce horizontal pictures in materials ill calculated for their satisfactory execution.

In the East, however, better traditions and better taste have been preserved. India and Persia, Turkey and Morocco, have steadily maintained the beautiful geometrical grouping of conventional forms which are most fitting for use in the textile arts, and most especially for such fabrics as cannot be exhibited vertically when in ordinary use.

Well, indeed, may Mr. Owen Jones direct us, as he has done in his admirable letter in the *Times* of April 19 last, to the fountains of inspiration of which he has himself drunk so deeply. Well may he point out to us that, while in the practice of the West there are danger and confusion, in the traditions of the East lie safety and simplicity.

In speaking of the Orientals, Mr. Jones says:—"By an unerring instinct and tradition they are able to apply ornament to the surfaces of objects they desire to decorate in the exact proportion and scale which the general form, material, and destination of such objects require. In the balance of colours, and in the distribution of the lines of the ornament, they arrive at a perfection which it seems beyond the European mind to reach. . . . We would venture to recommend the visitor who desires to study this Exhibition with reference to the influence of art on manufacturers to commence his studies with the Oriental collections. When thoroughly impressed with the true principles of decoration and ornament which he will find in these works, and carrying these principles in his mind during his visits to the collections of European countries, we feel assured that he will value these latter only so far as they observe the general laws of all art, and which Orientals so instinctively follow—laws which were equally followed in all great periods of art, and which are to be found in all great works of the past. It is the neglect of these unvarying principles which leads so often to ugliness and bad taste in the incessant search of the present time after novelty irrespective of fitness." The man of "the present time," so arraigned at the bar of criticism, naturally rebels, and proclaims his independence of tradition, which he regards but as a thraldom, limiting invention and inducing monotony. On this ground he will find M. Owen Jones quite ready to meet him with a vindication of the infinite novelty and invention which may be found in every variety of Oriental fabric. All are subordinated to common principles of structure and to common limits as to the reproduction of natural types, and yet each sample is a fresh and distinct delight. Can the same be said of the corresponding fabrics of the West?

These, it may be remembered, are not the sentiments of a theorist only, but of one who has shown in this very Exhibition, and in the class on which I am writing, his power to practise as well as to "preach." Next in point of excellence to the carpets of the East, upon which Mr. Owen Jones has founded his style, may, I think, certainly be ranked those exhibited by Messrs. Templeton, and manufactured from Mr. Jones's design. His arrangements of form and colour for the rugs of Messrs. Willis, of Kidderminster, are no less happy. Both are unfortunately displayed, the former especially so, since the mass of window immediately over the range of carpets takes almost all the brilliancy out of the livelier colours, and turns the neutrals all but black. These carpets are especially calculated to serve as "fonds," and to bring out to the utmost the characteristics of the mural decorations and sumptuous equipment in furniture, works of art, &c., of the apartments in which they may be laid down.

Allowance in looking at them, and, indeed, at any other carpets in the Exhibition, must be made for the awkward angle at which the top light strikes the wool, and is hidden, as it were, from the eye of the spectator. As he looks up to a carpet suspended vertically above his head he sees the side of each filament of wool, of which the carpet is composed, in shadow only, the illuminated side of the same filament being visible only to an eye placed above the level of the filament. The consequence is that the whole effect of the carpet is unnaturally darkened, and the luminosity is taken out of its scale of colour. As carpets are illuminated and seen in use the effect is entirely different. When so tested the light is usually found to fall almost at right angles to the surface of the carpet, and to so illuminate the whole length of its filaments or pile; while the eye of the spectator, looking down upon the surface of the carpet almost at the same angle, sees the light glancing all along the length of the filament or pile. The consequence is that the lowest toned tints acquire strength and vivacity, and give relief and brilliancy to the lighter and more vivid colours.

The general use of ornamental flooring in the East, and parquetry on the continent of Europe, tends to the maintenance of the popularity of rectangular carpets over those manufactured in widths, such as our usual Brussels goods, and adapted for completely covering surfaces of any irregularity of form. It is, of course, much less difficult to produce an agreeable design when that design is bounded by a regular figure than when it is limited to a short "repeat," running into all the corners and recesses of a room; and, further, it is much easier to produce an agreeable symmetrical design when the whole is contained, as in the case of a rug, within a few square feet than when it is extended to very many, as in the case of a large carpet. The reason of this is, that the eye of the spectator, always remaining at about an equal distance from the surface of the carpet spread upon the floor, embraces at one view easily the whole area of the rug, while of the carpet it with difficulty takes in without moving any more than a fractional part of the whole design. Hence it is, that generally we are better pleased with the patterns of rugs than of carpets, although an equal amount of clever design may have been applied to each. It is with a view to evade the difficulty of embracing the whole of a large design at one view that the Orientals with such excellent tact subdue by equal balancing and minute subdivision the component parts of all their large designs; thus entertaining the eye with symmetry upon a small scale, and preventing its desire to run out over the extended pattern in search of the completion of the form upon a fraction of which it has first seized. Neglectful of such prudent restraint in large modern carpets, we often find a line or border of white, or of brilliant colour, running over the whole carpet and giving, as it were, the key to its geometrical setting out. The purpose and working of this line are, of course, apparent and rational enough when the whole carpet is seen; but when the eye is fixed, perhaps, upon not more than one sixteenth of the whole, the purpose of the line is not revealed, and all the filling in, which is grouped about this line, appears to be equally purposeless. The true principle is that rather of subdividing the whole area of the carpet into symmetrical forms, as in an ordinary mosaic pavement, and then of so grouping those symmetrical forms, each complete in itself, as to make them work together to the composition of some general effect, bounded and kept together by a strong border. When this principle is followed the eye is satisfied if it takes in only one sixteenth, say, of the whole; it is again satisfied if it takes in a quarter of the whole, when it becomes sensible of a new basis of composition; and it is ultimately gratified with an aspect of fresh completeness when it embraces the whole area of the carpet. When it is neglected, unless the whole of the carpet, or at any rate more than half, can be seen at a glance, the pattern seems purposeless; and, from aiming at expressing too much design, the artist conveys to the spectator's eye the impression of his having given little or none. It is better even that his complete carpet should be monotonous than that its subdivisions should be unsymmetrical.

It is the very strength of illumination to which carpets are generally exposed, and the proximity of their surface to the eye, which demand and enforce solidity and sobriety of tone. Weak tints will never answer; the designer must work rapidly, with a full brush, a strong will, no vacillation, and a rich palette, and with the full assurance that none of his work can ever escape attention. All will be well and clearly seen, and a uniform strength and manliness of tone must therefore be sustained over the whole. Depth of tone should be obtained by the agglomeration of vigorous colours in small compartments, and by the avoidance of strong contrasts in immediate proximity, either of light and dark, or of complementary colours; and not by lowering tones, as by the general addition of black. In fact, to borrow the painter's phraseology, power and depth should be got by "first-painting" and not by "glazing down." Great richness is frequently obtained in the finest Persian carpets by subtile differences in the most highly illuminated tints, as by working with alternate crimson and scarlet reds, instead of with one monotonous red between the two, as we often do, or by using, say, a turquoise and an ultra-marine blue together, or by relieving a "lemon" against a "cadmium" yellow. Transparent half tints of great power are obtained by admixtures, as by spotting a black ground with orange to produce a luminous effect of brown instead of using a solid untransparent brown; or by spotting a black ground with blue and yellow to obtain a vivid olive, instead of using a solid olive, which in the mass would only look dead and heavy. Such fabrics are full of subtile contrivances which seem to spring into being spontaneously under the hand of the true artist. The painted picture-books of the Japanese are singularly rich in these subtleties.

In assessing progress generally there are two tests which should be applied—viz., endeavours to ascertain the relative abundance of the very good and the relative scarcity of the very bad. Applying these tests to assess the amount of progress made in the carpet trade since 1851, the first, the abundance of the very good, is slightly in favour of 1867. In point of excellence of manufacture this is scarcely so conspicuous, as in point of propriety of design. India and Turkey are, as usual, unimpeachable. France in all its productions of Oriental styles is very good; and in England most of the carpets of Templeton, Jackson and Graham, Brinton, Southwell, Boyle and Smith, and Lapworth are better than the best of the goods manufactured by English carpet manufacturers in 1851 (if we except, perhaps, one carpet designed by Pugin), or even in 1855 or 1862. The rugs of Willis, of Kidderminster, constitute a notable advance; and so, in a particular direction, do the goods exhibited by Messrs. Jones and Willis and others in the Architectural Court.

In Belgium, Russia, and Holland the advance is not marked; but in Austria, through the powerful house of Haas and Sons, a great deal has been achieved.

When we apply the second test—that of the relative scarcity of the very bad—we shall find a still more notable advance. If some extraordinary picture carpets—such as that of the portrait of the Emperor, of the twelve apostles, of the meeting of the Emperor and the Queen of England, and one or two more of a similar kind but less outrageous, are excepted, and the eyes are shut to a few monster roses and too fervid rugs (the latter especially abounding in France)—there remains nothing to equal the turbulent allegory and landscape of 1851, and in a minor degree of the succeeding exhibitions. This change for the better is due in a great measure to the just theories enunciated by men like Owen Jones and Welby Pugin, whose honest perseverance and enthusiasm have gone far to strengthen the true-sighted, to determine the wavering in taste, and to convert many a previously "hardened sinner" in the ways of false principles and faulty practice of this branch of industrial art to juster and more reasonable paths. Pugin's views are set forth sufficiently distinctly in his "True Principles" and "Apology;" but those of Owen Jones (having been, for the most part, orally enunciated) are not as well known to the literary world as they should be. I may, therefore, with advantage quote from his privately-printed lectures "On the True and the False in the Decorative Arts," the following articles of his creed as touching the chief products included in class 18 of the Exhibition of 1867.

"Carpets," says Mr. Jones, "should be darker in tone, and more broken in hue, than any portion of a room, both because they present the largest mass of colour, and because they serve as a background to the furniture placed upon them.

"As a general rule lighter carpets may be used in rooms thinly furnished than the contrary, as we should otherwise have too overpowering a mass of shade. Turkey carpets are by universal consent adopted for dining-rooms, but not all Turkey carpets (and, indeed, very few) are fitted for such a purpose. The generality of Turkey carpets consist of a border, with the whole middle of the carpet forming one large pattern converging to the centre. All-over patterns are much more rare. In the East Turkey carpets are placed on a raised platform, or dais, at one end of a saloon, and all round the edge of it are cushions, on which the Easterns recline; so that the whole middle of the carpet is perfectly free, and the complete pattern is seen at a glance. This is not the case when they are transferred to our dining-rooms, where the dining-table alone cuts off the best half of it. So, you see, even the favourite Turkey carpet must go with the Cashmere shawls, and is another instance of our adopting an article from a foreign country and applying to a purpose for which it was not intended.

"The principle of design in a Turkey carpet is perfect, and our manufacturers would do well, instead of copying them in Axminster, as is their wont, to apply the principles to be learnt from them in producing carpets more in harmony with their requirements.

"I will say no more on the floral style but to express a regret that the more perfect the manufacturing process in carpets becomes, the more do they (the carpets) appear to lend themselves to evil. The modest Kidderminster carpet rarely goes wrong, because it cannot. It has to deal with but two colours, and consequently much mischief is beyond its reach. The Brussels carpet, which deals with five colours, is more mischievous. The tapestry carpets, where the colours are still more numerous, are vicious in the extreme; whilst the recent invention of printed carpets, with no bounds to its ambition, has become positively criminal."

The only objections I have ever heard raised to these and similar dogmas of Mr. Owen Jones are that they are so precise and logical as to leave little scope for the change and novelty of style constantly demanded—insufficient latitude for fancy—and that they serve, therefore, as fetters, instead of crutches, to the weak. To this I have heard replied that for art or art-industry to flourish strenuously in any country fetters are necessary for the weak. Those who are strong enough may burst away from them if they see fit.

It would have been impossible for Mr. Jones to have selected better illustrations of the successful working of his principles than are to be met with in the Indian and Persian departments of the present Exhibition.

In the former are to be found, under Dr. Forbes Watson's judicious arrangement, good samples of five leading varieties manufactured on the continent of India, viz.:—

1. The suttringees, or common cotton rugs and small carpets, generally in stripes or chessboard patterns, blue and white, manufactured on Kidderminster principles, and used all over India.

2. A carpet made like Turkey carpeting, but with cotton instead of woollen tufting. These two are common in India, and largely manufactured at Hyderabad, Mysore, Tanjore, Sasseram, Jubbulpore, &c.

3. Woollen tufted carpets, corresponding with the Turkey carpet of European commerce in material as well as in make. These are largely made now in Northern and Central India and at many Government gaols. Large numbers of convicts are actively employed in this class of production. Several samples of their skill are shown from Jubbulpore, Bangalore, Patna, &c. Such carpets, made at Mirzapore, Gorruckpore, &c., and others of finer quality, are imported into England by well-known dealers, such as Messrs. Watson, Bontor, and Co., Messrs. Robinson, Vincent, and Co., and Messrs. Brinton and Lewis—by the latter especially, as models for their own guidance in manufacture.

4. Carpets made of Cashmere wool, and of the utmost delicacy both of design and fabrication. The most perfect carpet in any department of the whole Exhibition, taking design and manufacture together, is of this class; and has been sent to Europe as a choice specimen of native produce by his Highness Dewan Singh, Chief Minister of Cashmere.

I am glad to know that it has been purchased, at the price of several hundred pounds, for reproduction if possible in this country, by Mr. Brinton, with whom, and with Dr. Watson and Mr. Peter Graham, I examined it closely.

The 5th, and most costly of all Indian carpets, is the variety made partially or entirely of silk. The most beautiful carpets of the kind I have ever seen have been old Persian and North Indian. Exquisite examples are now forwarded from Tanjore in Madras, and from Central Asia, where at Khutan in Beloochistan, &c., a most interesting and almost Greek type of design is preserved—differing essentially from either ordinary Hindoo or Mohammedan.

Of such silken carpets the Persian department of the Exhibition failed to furnish us with any examples, so far as my observation extended; but by way of consolation for their absence provided, in a series of rugs and divan coverings, an extraordinarily beautiful set of models of what perfect carpets should be. In them the conventional Flora of the carpet designer seemed to bloom into enduring freshness, and unobtrusive liveliness pervaded every specimen. They seemed to have but one fault—viz., high price; not that they appear dear when the infinite amount of hand work involved in their production is taken into account, but that they were costly as compared with European goods.

In all these carpets the design is unexceptionable; and although there is, as it were, a family "strain" running through the whole, the actual variety of detail seems endless, both in form and colour.

The carpets in the Exhibition which manifest the closest kindred, to the Indian and Persian are the Turkish and Tunisian. Of the former of these there are no less than some 250 exhibitors, the majority of whom stand upon about an equal footing of excellence. To individualise the "wife of Ibrahim," the "wife of Mustapha," and the inhabitants of this or that village, would be waste of time, except for the Smyrniote agents, who buy up the carpets from the makers for shipping. We shall rather pursue the subject by noticing the produce of factories in which efforts are made to execute carpets by means of analogous processes, beginning with Holland, and then taking up Russia, Greece, Spain, Austria, Algiers, and Tunis. After a few passing words on Prussia and Belgium, I shall conclude this branch of my subject by noticing the products of France and England in somewhat more detail.

It is strange that, expressly founded to reproduce such excellent models as are furnished by the majority of the Turkish and Smyrna goods, the Royal manufactory of Holland, at Deventer, when attempting something exceptional, should fall into the strange error of imitating a third-rate French style. The large carpet with a "marone" ground, and a miserable bunch of roses, or rather red cabbages, on a panel in the middle, sets forth in a very staring shape the prominent defects most usually to be met with in such French carpets as were generally manufactured for exportation to America and elsewhere some twenty years ago, and are still exceptionally produced.

In no part of the Exposition is the relative superiority of barbaric over common civilised art, in the arrangement of patterns for carpet fabrics, better or more distinctly shown than in the Russian department. When one turns from the admirable rugs and hangings of "the frosty Caucasus" to the wretched, tufted carpet of Engalytscheff, of Bedischov, rampant with flowers about ten times their real size, and of the crudest possible colouring, it is impossible not to recognise that one is as truly right in principle, as the other is truly wrong. The main feature of the right in the one case, and the wrong in the other, consists in the error of the application of imitative art to a fabric, to a use, on a scale, and in a position for which it is totally unfitted. The moment one is impressed with the idea of walking or sitting upon what no person in his senses would think of walking or sitting upon, as I have before said, a painful sense of impropriety is experienced, proportioned in intensity to the vivacity with which this misapprehension of judicious design is expressed in the fabric.

The Greek mats and carpets are of Kidderminster make, in brilliant and often agreeable colours; very rough and effective, with bold stripes and mosaic patterns.

There is scarcely anything worse in its way in the Exhibition than the great Spanish carpets, coarsely imitating bad French designs.

The Austrian carpets by Haas and Sons are, for the most part, excellent both in design and execution. The chief specimen of these manufacturers, the reproduction of an ancient Persian carpet which belonged to Peter the Great and intended for the Imperial saloon of the new opera at Vienna, is a perfect "tour de force" for closeness of texture and minute rendering of complicated form. Being specially adapted for candlelight effect, it shows to great disadvantage by day; but I can readily believe that, seen by the light for which it was intended, its effect would be admirable. Indeed, it presents a very valuable lesson to the student in this particular, as it will be at once recognised that the addition of the yellow artificial light will darken the greens of the carpet by bringing out the complementary blue, and lighten the red so as to bring it to a just balance with the green; it will also, of course, take the predominating yellow tint of the carpet by daylight out of the whole by intensifying, by "simultaneous contrast," the complementary blues and purples.

Nothing in the Exhibition, after India and Persia, is better than are the Algerian small carpets and rugs. The colouring is most agreeable, and the make of the carpet, with its long and well tied-in tufts of wool, is calculated to insure extraordinary durability in wear. This excellence in long-tufted carpeting, rugs, divan coverings, &c., is admirably maintained by the class of carpets shown in the Tunisian department, and made of the long wool of "Deridi." Of the still finer wool of Cashmere there is a "tapis de luxe" lined and fringed with silk, worthy of the most luxurious harem, exhibited by the Prince Mohammed, son of his Excellency Mustapha Khaznadar. I have been informed by one who has long resided in the East that excellent models of Persian and Indian design as applied to carpetings are constantly circulating throughout the southern and western Mohammedan countries, through the sales of their fine "praying

THE LATE PARIS INTERNATIONAL EXHIBITION.

ELECTRIC TELEGRAPH APPARATUS (CLASS 64).

Fig 1

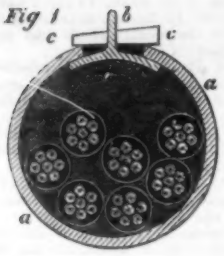
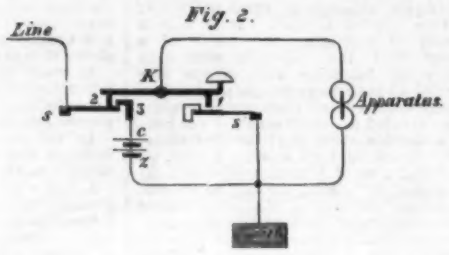


Fig. 2.



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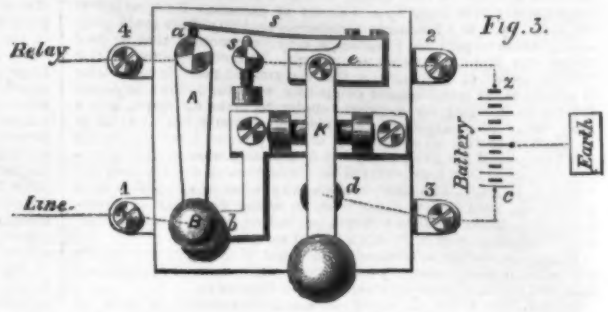

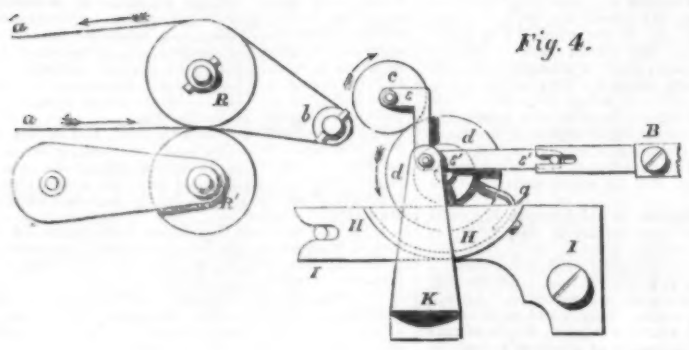

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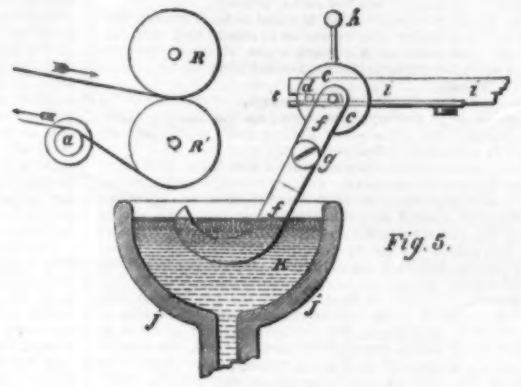


Fig. 5.

Fig. 7.

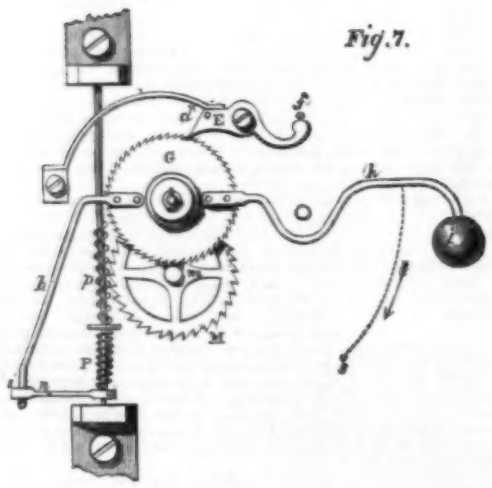


Fig. 8.

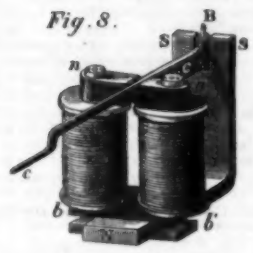


Fig. 9.

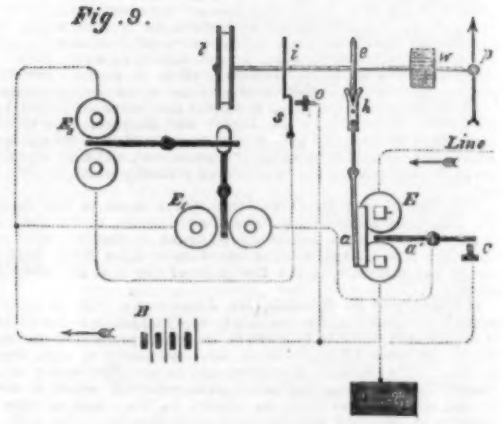


Fig 10

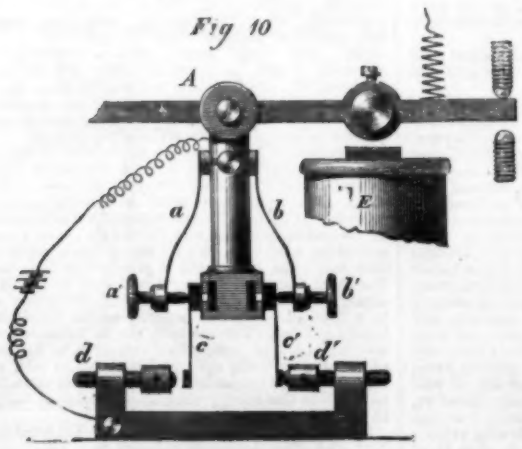


Fig. 11.

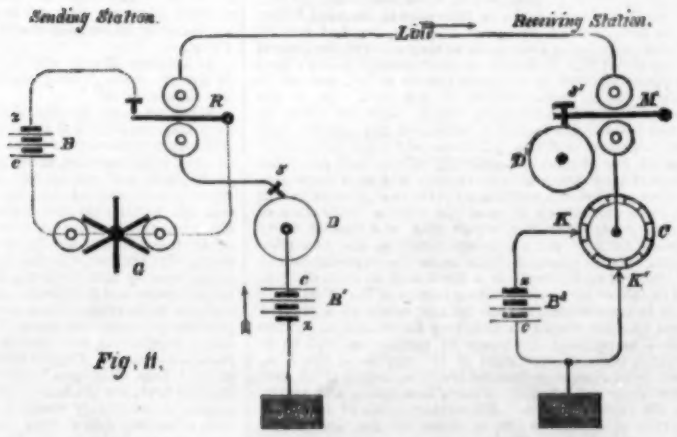


Fig. 6.

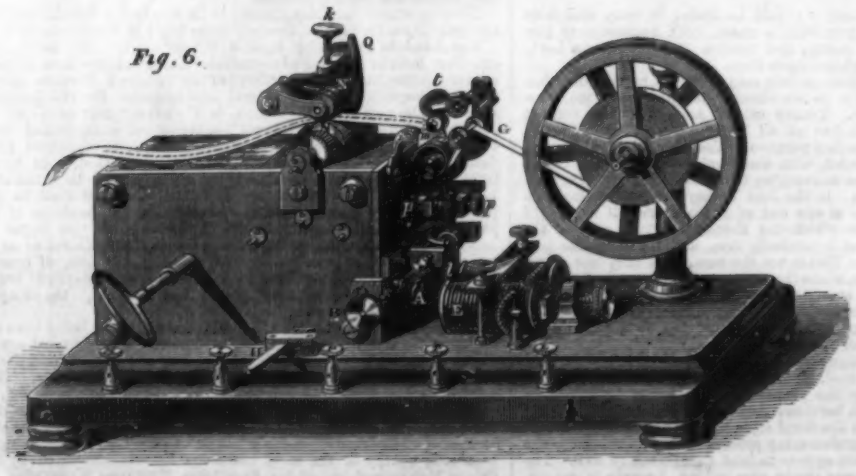
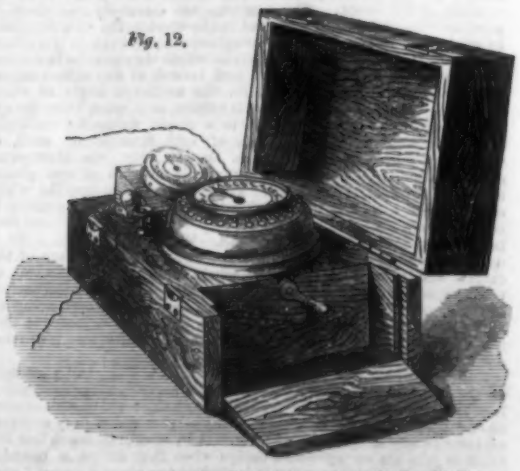


Fig. 12.



1. Section of Belgian Tube, containing Underground Telegraph Cables.
2. Bréguet's Magnet Key, invented by M. Lecoine.
3. Siemens Brothers' Key for Submarine Apparatus.
4. P. Vinay's Morse Ink Recorder.
5. Morse Apparatus modified by A. F. Cacheleux.
6. Bréguet's Morse Ink Writer.
7. Sortais' Self-releasing Apparatus.
8. Siemens' and Halske's Polarised Relay.
9. Apparatus for Interruptions of the Galvanic Current, in Joly's Printing Telegraph.
10. Vibrating Contact Apparatus in the Spanish Type-printing Telegraph of Ramon Morenes.
11. Plan of Lenoir's Mechanical Copying Telegraph.
12. Wheatstone's Magneto-Electric Dial Apparatus.

THE LATE PARIS INTERNATIONAL EXHIBITION.

LIGHTHOUSES AND COAST ILLUMINATORS, ETC. (CLASS 66).

carpets" by pilgrims from the far East, whose means becoming exhausted at Mecca, are obliged to part with all their "personalties" in order to find the means requisite to take them home again.

Amongst the carpets of other materials than wool and cotton the most curious of all are two, made of various skins and furs, shown by Greeve and Son, of Amsterdam. The design of one of these is really clever in its way.

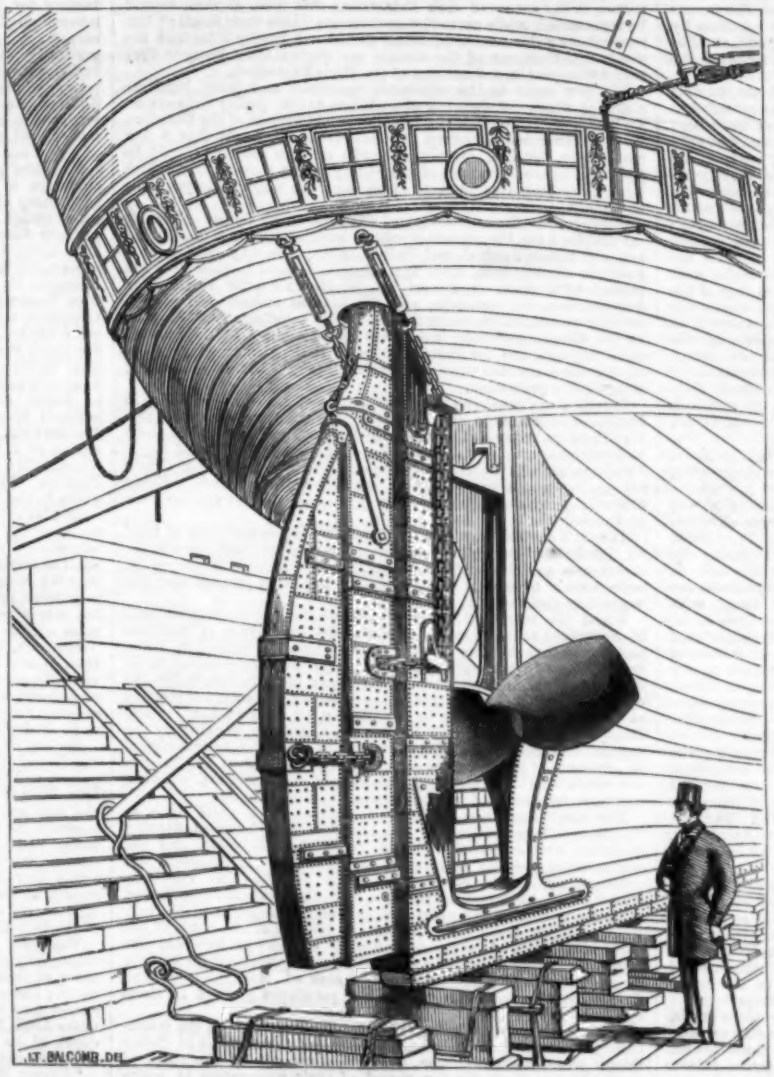
The Prussian carpets are unimportant, although one exhibitor (Schoeller et Fils, of Düren) shows a readiness to adopt some of the mechanical processes lately perfected in England. The remainder of what is exhibited is principally rather hard and dry imitation of Turkish work, the best being by Gevers and Schmidt, of Schmiedeberg.

From Belgium much better things might have been expected than have been sent. The Royal manufactory at Brussels of the carpets of Tournay scarcely maintains its old reputation. Considering that Tournay is essentially the father of Kidderminster (the Brussels carpet trade having been introduced into the latter place from the former only about the middle of the last century), one is forced to recognise that the child has wonderfully outgrown the parent. I would, however, except the productions of Braquinié, of Ingelmunster.

We now come to the two countries in which the keenest competition for ascendancy in the general carpet trade is carried on—France and England—and on the relative artistic position of which I have already made some remarks.

In France, the Imperial products of the "Savonnerie," an establishment incorporated with that of the Gobelins for tapestry, naturally hold the first place. The Savonnerie and the finest of the Aubusson carpets are hand-worked, exactly on the same principle as our old Axminster carpets, but with certain innovations borrowed from the Gobelins practice. The leading specimen of the manufacture is a largish carpet hanging in the middle of one end of the Sèvres and Gobelins Court. The design, which is of singularly harmonious colouring, is founded on old French models, wrought out with the greatest taste by M. Dieterle, perhaps the most distinguished living ornamentist in France. In execution there is nothing else to compare with it; but its very excellence is its greatest drawback. It is too fine a picture to tread on. Interlacing hoops and flowers, and arrows and ribbons (if my memory serves me) are figured in lineal, and coloured in aerial, perspective with perfect verisimilitude. Every curve is struck with the greatest accuracy the gradation of tone is almost imperceptible, and yet the result is neither good picture, good carpet, nor good ornament. In fact, it can scarcely, I think, be looked upon as other than a costly mistake. I have been, perhaps, especially hard upon this product, but it is only because it is so alluring in its elegance and harmony of tone, as it hangs in a place of honour, that it becomes a "special snare" to the unwary. Carpets are also occasionally made at the Imperial establishment at Beauvais, although the bulk of what is produced at that celebrated establishment more nearly resembles Gobelins tapestry, and is almost exclusively used for furniture covering. In the matter of design for carpets, M. Clerget, an Orientalist, *à la mode de Paris*, exercised some twenty years ago a salutary influence. This, however, seems to have died out, although he is, I believe, still living, and a wilful sort of confusion has established itself between designs fitted for tapestries and those suited for carpets; in other words, between designs suitable for vertical and those fitting for horisontal surfaces.

The well-known house of Sallandrouze (père et fils) fairly sustains its well-earned position at the head of the French carpet manufacture as far as dexterity is concerned, although "discretion" may not be regarded as its leading characteristic. It seems, indeed, hardly possible to imagine that the same firm can produce goods varying so absolutely in principle as do the bulk of what it exhibits in the florid old, and still more florid modern, French style, and the specially quiet and agreeable Persian-patterned carpet which is in the centre of the side of the Limoges china court. One of their large carpets, although a little vulgar, narrowly escapes being successful. It is entirely spoilt by an uncomfortable damped blotting-paper coloured centre panel, with some doves and a vase relieved upon it. Upon the whole, one feels most anxious to see this respectable old house, which has worthily sustained the reputation of Aubusson since its factories passed from Royal direction into good commercial and self-supporting hands, take a more independent line, so far as its carpets are concerned. It has too long only done well what it has been accustomed to do well without marching with or leading a return to more wholesome principles of design for carpets.



LUMLEY'S PATENT RUDDER.

In point of quiet good taste, the best goods in the French portion of the Exhibition are those, for the most part in imitation of Oriental fabrics, by the house of Bernard Laurent, of Amiens. These are jacquard-woven pile carpets of the most vivid and yet very fairly harmonised colouring. In one small and beautiful rug a very happy effect is produced by throwing in a few compartments in silk. The Amiens carpets of the house of Deletoile are also, with certain exceptions, highly commendable. Some of the large carpets, in imitation of Turkish, of the house of Foye Devenne, are excellent; but two of their specimens, one with very large circles and octagons, and the other with very raw-looking flowers, exhibit misapplication of considerable manufacturing skill. If, as is no doubt the case, flowers cannot be executed in any ordinary qualities of carpeting except upon a ridiculously magnified scale, they ought not to be attempted. It is, indeed, somewhat difficult to say when or how they should be.

The large house of Rosé Abraham, of Tours, exhibits very good quiet Persian patterns; and yet, as if to show how hard it is to abandon bad ways and traditions, adds to them three rugs which, for "loud" pattern and colour, are amongst the worst things of the sort in the Exhibition.

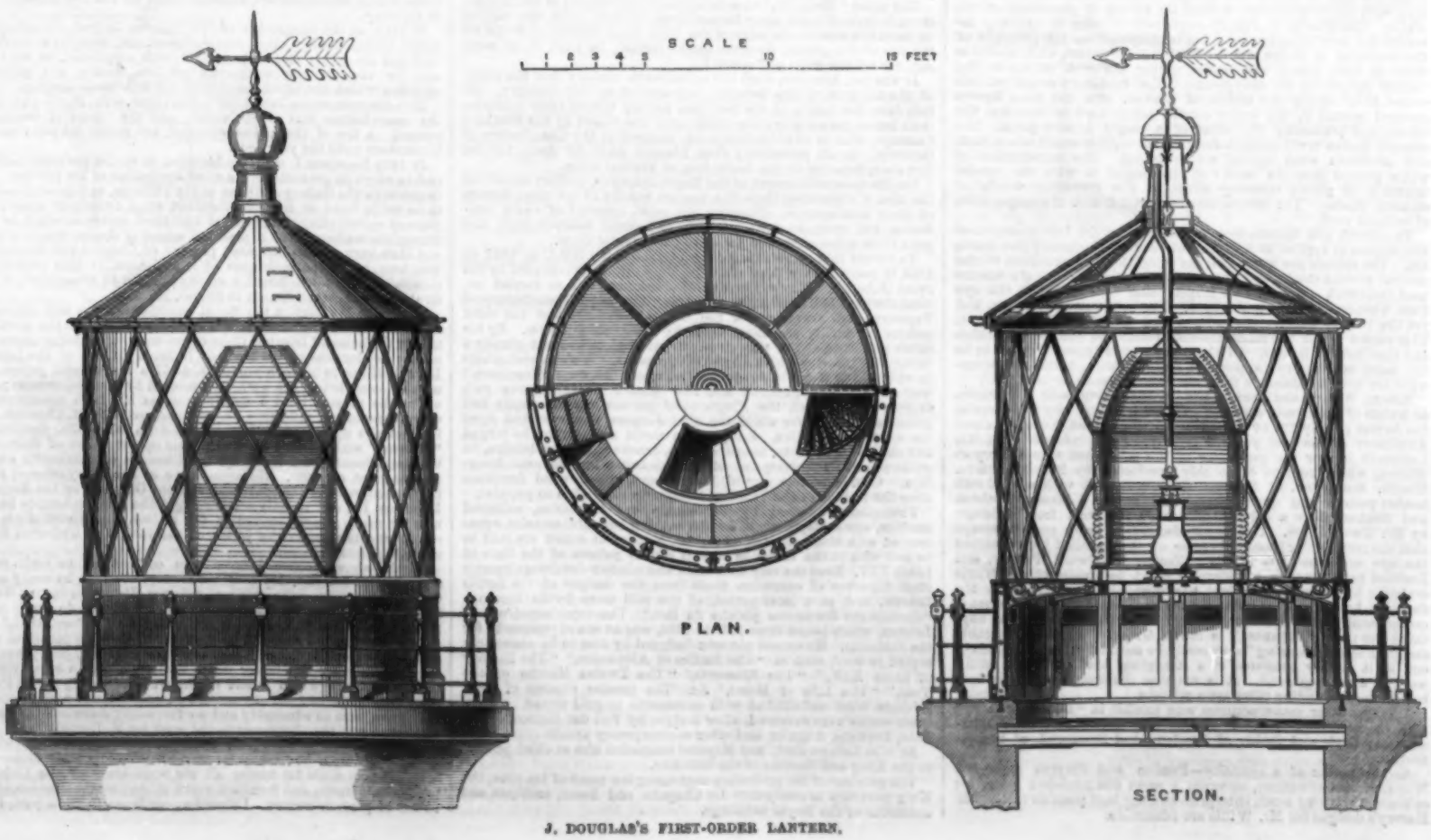
Amongst the private manufacturers of Aubusson who rival MM. Sallandrouze, MM. Eroc (père et fils), who spin their own yarn, exhibit both moquette carpets and plain woven ones in which Persian and the Gobelins traditions fight for predominance over the fortunes of the house. The latter appear to have the best of it; for the place or honour in the Faience Court is given to a sickly but ambitious specimen of the old French style, while many exceedingly harmonious carpets of Persian style hold inferior places on each side of it. They, too, have some fiercely bad rugs.

Masure and Lourthiois, of Tourcoing (Nord), have executed some fairly good patterns, rich and quiet, for the well-known Parisian agency house of Sallandrouze.

There is a clever kaleidoscopic pattern on a blue ground, by Daumesou, of Nismes; but the rest of the exhibitors in the "maroquinerie" Court show nothing in any way remarkable.

For a display of many of the worst faults of design, as applied to carpets, the visitor may be referred to the great gridiron upon a crimson ground manufactured by Clement Gravier, of Nismes. J. Vayson, of Abbeville, carries the mistaken application of pictorial art to the carpet trade to nearly its acmé in his portrait of the Emperor in monochrome. It is not to be denied that in this work very good manufacturing dexterity has been displayed; but what is still wanting, after all, serves only to demonstrate the inexpediency of attempting such *tours de force*. The insufficiency of the pictorial rendering of the subject is naturally heightened into the region of the absurd by the reflection that it would be impossible to use this production as a carpet without literally "trampling under foot" what the present régime, at least, of Frenchmen are "bound to obey and serve" in the highest degree. The large carpet of this manufacturer is one of the most ponderous and remarkable specimens of Jacquard weaving in the building. The mounting of the loom for this must have been most tedious and costly, and it is only to be regretted that so much trouble should have been wasted upon so unsatisfactory a pattern. I have dwelt longer upon the productions of this firm than I might have done if it had held a lower rank in French industry; but when such productions are contributed by a house displaying with its products no less than eighteen gold and twelve silver medals, gained in various industrial contests, it indicates an exceptionally low standard of popular taste for a country so far advanced in civilisation as France.

Upon the whole, in this class the manufacturers of Aubusson make



J. DOUGLAS'S FIRST-ORDER LANTERN.

a rare display, in which "what to eat, drink, and avoid," in point of industrial art, is pretty equally balanced; but, while we criticise, it is impossible to help admiring the productions of houses such as those of Duplan and Co., Requillart, Roussel, and Chocquel, Braquienie, and, last, not least, Sallandrouze. Everyone must feel that, with all its faults, it is a great industry, worthily represented.

The English exhibitors suffer much more than the French from their floor-coverings being hung as wall-coverings, since the former wisely do not emulate the pictorial example generally set them by the latter. There is, however, one notable exception; and, as that constitutes the only serious example of heterodoxy left amongst the British, it may be well to dispose of it at once.

Messrs. Taplin, Beall, and Co., have employed, no doubt, an able artist to design for them some very ambitious pictures intended to rival Gobelins tapestries at cheap rates. These pictures have been executed with extraordinary skill by Messrs. Templeton, and they are, to all intents and purposes, carpets. Whether they are intended for covering walls or floors, they are alike open to the very grave objection that the process of chenille weaving is inapplicable to the reproduction of high art. The very basis of the system (which involves, 1st, the reduction of all designs to a system of squaring; 2nd, a translation from that squaring into the gauze woven striped cloth, which when cut up forms the pile weft; and, 3rd, the use of that pile weft with such perfectly even tension as to make each colour find its place exactly with reference to the warp-strings of the fabric) is adverse to the chances of a true rendering of subtle expression or the preservation of dignity. To have attempted to depict the twelve apostles, the Queen, and the Emperor of the French, &c, by such a process, on a grand colossal scale, is a climax of audacity which it would have been better never to have aimed at; such ambitious failures serve only to justify the shrugs which they receive from all who know how such subjects ought to be depicted. If unratisfactory as hangings, of course such products would be ten times worse as carpets.

When we turn from Mr. Templeton on somebody else's platform to Mr. Templeton on his own, the aspect of matters is, happily, entirely changed. I have already and fully spoken of his merits as an inventor, and of his indomitable energy and perseverance, and have only now to record my satisfaction, as an artist, with all of his products manufactured from Mr. Owen Jones's design. They are in every way creditable to British industry, and thoroughly justify the gold medal awarded to Mr. Templeton. They are possibly cast in a too uniformly low tone, but it is far better that they should err slightly on this side than upon the other. One of them, with a deep blue ground, is especially admirable. Of his old style—i. e., a free rendering of French designs—Mr. Templeton exhibits one good specimen, manufactured, no doubt, at great cost, and involving much labour and ingenuity to produce, but not altogether to my taste. Such carpets, however, still find a very large sale, and I am told that for export it is of no use manufacturing anything more quiet. For the American market, the manufacturers declare that the more glaring their carpets are the better they are liked.

Next to Mr. Templeton in order of merit I should certainly place Messrs. Brinton and Lewis, of Kidderminster, who contribute admirable specimens of a kind of carpet of the chenille genus, but said to be woven with certain novel appliances of which they are commencing the current manufacture at Kidderminster. The texture of these carpets is of the description called patent Axminster, and they certainly exhibit a quality and closeness of substance hitherto not attained, I believe, in any other fabric.

The great advantages these goods are alleged to possess are:—"Delicacy and perfection of pattern, with clearness and softness of detail; solidity in the pile and luxuriousness of tread as a floor-covering; great substance and durability in the wear; the introduction of unlimited colour, affording extensive combination of effect; and, lastly, what is of the highest importance in the demand for first-class fabrics, the capability of being made in the entire piece, without seam, for saloons of any dimension and shape."

The name "Indian Axminster" has been selected for these goods, as the fabric represents the texture and effect of East Indian carpets, with a complete accuracy of detail seldom found in those goods, combined with the luxurious perfection of the Axminster fabric. Messrs. Brinton and Lewis have been greatly assisted in their preparation for the introduction of this valuable class of carpet, the pile of which is at least three quarters of an inch in length, by the judicious advice of Dr. Forbes Watson and Dr. Dresser.

The artistic impulse especially given by the latter will no doubt retain the "bloom" and beauty of the patterns in which the Indian Axminsters will be chiefly manufactured.

The bulk of Messrs. Brinton and Lewis's other exhibited goods consist of various carpets of "Wilton make," woven in widths by patent power-loom, and so sewn up, with borders, &c., as to give all the effect of a carpet specially designed for any apartment.

Dr. Dresser has been good enough to inform me that, out of Messrs. Brinton and Lewis's collection, the white-ground carpet with drab shadow and crimson arabesque scroll, is intended for large saloons, where two-breadth designs are usually preferred, as giving the greater scope for the artist's treatment of a massive subject in relief like this, of flowers and foliage, treated in self colours (*ton sur ton*), with heavy scrollwork to form the setting or panelwork of the whole. The Persian or Turkey carpet next in order is similarly intended for large compartments, but is composed on the principle of flat treatment in design and deep rich tone of colour, with combinations of blue, green, and scarlet, giving different effects in the various figures on the red ground. The medallion centre of this carpet is to occupy the middle of a room, with the other figures grouped around it, the border outside being used to complete the whole, and producing the effect of a carpet in one piece. The crimson Italian scroll carpet is designed for smaller rooms where dark and moderate sized figures are preferred. The introduction of white ground into the border of this carpet is with the special intention of giving relieving effect to the pervading weight of crimson shades. The browns are to contrast with the deeper tints of crimson used.

The fourth and last made-up carpet is after the best examples of flat treatment applied to the forms of nineteenth-century decorative art. The colours are worked on the principle of illumination to the neutral ground shade, and the conventional forms and the colours used therewith allow of this carpet being equally before the eye from whatever point it is surveyed. The entire effect is bright, and yet the livelier colours are kept in due subordination to the rest. This carpet is for the moderate-sized rooms and libraries of British and Continental houses. Of these the second appeared to me to be the most satisfactory in point of design, although there is somewhat too even a balance in it between the red and the blue.

Messrs. Watson and Bontor, and Mr. Lapworth, both well known as dealers of great taste and good judgment, exhibit very fine carpets, the former principally of Indian manufacture, and the latter a real Axminster of the best possible quality. I am informed that Mr. Lapworth is now the proprietor of the celebrated manufactory at Wilton, which used to be so ably conducted by Mr. Blackmore. Messrs. Henderson, of Durham, show very well with a good rich beaded pattern and quiet diaper and border. Messrs. Jackson and Graham show a noble carpet made for them from a design by Mr. Owen Jones. This is satisfactory in every respect, except that the rectangular framing to some of the panelled forms catches the eye somewhat too readily. Messrs. Woodward, Palmer, and Rudford have made a considerable effort to obtain characteristic designs; but, whether accident has misapplied the labels or the designer has misapprehended the styles, certain it is that what is conspicuously labelled "Pompadour" is more like Gothic than anything else; and "Japanese" is rather Greek. What the "Gothic design, French colouring" may really be meant for I could not make out, as it mainly consisted of a straggling kind of Italian scroll-work on a white ground. It is not that the designs are really bad, but the high-sounding titles are a mistake.

Amongst other manufacturers who exhibit in "admirable form" may be mentioned Messrs. Morton and Humphries, of Kidderminster; Boyle and Smith, of London; and Southwell, of Bridgenorth.

As the maker of a specialty—Persian and Smyrna rugs—Mr. Willis, of Kidderminster, occupies a most distinguished place, his exhibition showing much enterprise and the best possible taste. Mr. Harvey's designs for Mr. Willis are admirable.

In generalising upon the English exhibition, one cannot but be struck by the absence of that class of carpeting in which for merit and extent of manufacture we stand without rivals. I mean the good Brussels carpet of commerce. Our cheap carpets, too, are scarcely at all represented; while in Yorkshire, the north of England generally, and Scotland we produce enormous quantities of such goods at the lowest price and of the best quality. It is, of course, in the nature of such Exhibitions that *tours de forces* should be represented, while current manufactures "hide their heads;" but, remembering this tendency, critics should not hastily infer that the staple manufactures of the country are degenerating because they may not appear in redundancy at the Paris Exposition.

We now come to the admirable tapestries and other furniture stuffs, of which the quantity overwhelms as the quality delights us. To begin, of course, with the Imperial establishment of the Gobelins, its importance in the history of industrial art demands that a few paragraphs, founded on recent works on the subject, should be dedicated to a brief survey of the history of the manufactory, which is, indeed, little else than an epitome of the whole history of the manufacture.

Setting aside the archæology of the subject, so far as relates to the Middle Ages, the details of which may be readily found in the pages of Potier, Jubinal, and Viollet Le Duc, we may assume, as a *point de depart*, that, until the reign of Francis I., tapestries and carpets were made in France by private enterprise alone. The *haute-lissiers*, the Saracens, and the blanket-makers had carried on their manufactures under the shelter of privileges granted them by the King or provosts; but it was the Flemings, by their manufacturing skill, and the Italians, through their greater dexterity as draughtsmen and designers, who mainly brought the art of making tapestries to perfection.

Francis I. collected the most able weavers he could find, either in France or in Flanders and Italy, the two countries in which this branch of industry had been carried farthest, and established them at Fontainebleau, under the direction of the superintendent of Royal buildings, and of Salomon de Herbaines, weaver to the King. These artists, for whose use silk, gold, and silver thread were lavishly expended, produced splendid hangings from the designs and cartoons of Primaticcio.

The civil and religious wars of the following reigns were as fatal to Royal establishments as to private enterprise; and, amidst the continuous troubles of "the league," the successors of Henry II. were unable to devote much money to any other purpose than the support of their armies.

About the year 1600 Henry IV. commenced the re-establishment in France of those manufactories for the production of furniture and decorations for the Royal palaces which had fallen into decay during the two preceding years, although he encountered in so doing the strenuous opposition of his sagacious Minister, Sully—an opposition thoroughly justified by the general exhaustion and poverty of the country. He began by establishing his weavers, Laurent and Dubourg, in a house in the Faubourg St. Antoine, vacated by the expulsion of the Jesuits. On the return of the latter, he transferred the students of these master weavers to the galleries of the Louvre, and established there a goodly gathering of masters in art, painters, sculptors, engravers of precious stones, clockmakers, &c.

The chief *haute-lisse* weavers remained but a short time as "compound householders" in the Louvre. Two hundred Flemish workmen were collected and put under their direction, and the manufacture, speedily established in the Palais des Tourelles, was subsequently transferred to an hotel in the Rue des Varennes. Henry IV., to encourage his protégés, gave them extensive privileges, but his premature death prevented the full development of his projects. His son, Louis XIII., though the founder of the house of the *Savonnerie*, allowed the establishment of his predecessors for tapestry-weaving to fall into decay. The only active steps he took in its favour was continuing to the sons of Mark Comans and Francis Laglanche, master weavers, the privileges granted to them by Henry IV.

Some tapestry made during this reign (and no doubt in the manufactory of which I am speaking) representing the miracles of Saints Crispin and Crispinianus was, apparently, ordered by the guild of shoemakers of Paris for the chapel of their corporation in Notre Dame. The struggling trade made little head in the troublesome times which succeeded the death of Louis XIII., and it is probable that the nominal patronage of an impoverished Court was rather an impediment than an aid. The weavers suffered, artists languished, and the long wars of the minority of Louis XIV. nearly ruined them. On his ultimate accession to the throne, between the earnest wishes of the King and the able conduct of Colbert, in a few years all the Royal manufactories were reinstated, and their prosperity exceeded that of their best days under preceding Sovereigns.

The great Lebrun, first painter to the King, directed the establishment of the *Savonnerie*, at Chaillot, in which Philippe Lourdet had caused children taken from the hospitals to work. Hinart was appointed to take charge of the factory at Beauvais, where furniture-stuffs and hangings were made. The manufactories of Felletin and Aubusson for carpets, &c., owed to the liberality of the King a painter and a dyer, maintained at his expense.

The name "Gobelins," as a designation for tapestry of the highest class, is derived from some former dyers of that name, who carried on their business on the edge of the little River Bievre, at Paris, on the site of the present Imperial establishment, in 1450, or, as some say, not till the reign of Francis I.

It was not, however, until the seventeenth century that the name of the old dyer, Gilles Gobelins, was applied to this tapestry. At this date the family of the Gobelins having retired from business, their house passed into other hands, and was rented by the Brothers Cannaye, who, in addition to dyeing, engaged in the manufacture of tapestry. In all probability Jean Lianzen made for them, for the first time, tapestry on the *haute-lisse*, or vertical warp.

On the re-establishment of the Royal châteaux, Colbert conceived the idea of decorating them in a manner worthy of the magnificence of their architecture. Choosing the most talented of every profession and trade, he united them in one grand establishment, and gave them apprentices and pupils to study under them.

To extend this establishment he persuaded the King, in 1662 or 1663, to purchase a portion of the building originally occupied by the dyers Gobelins. The augmented establishment was so carried on, from the year 1667, under the style of "The Royal Manufactory of Tapestry and Furniture for the Crown"—Colbert and the chief painter personally assuming, with the King, its direction. By his edicts published at this time it is evident that it was not simply a factory for tapestry which Louis XIV. created. It was a vast studio in which all that can be comprehended under the term "furniture" was made. Two hundred and fifty master weavers wove rich tapestries for which the King's chief painter and his pupils had given designs, and for which the able Jacques Kercoven had dyed the wools or the silks. Sculptors in metal and goldsmiths forged and chased bronze into lamps, sconces, brackets, and candelabra, in styles suitable to correspond with the Gobelins and Beauvais hangings. Cabinetmakers carved, turned, and gilded wood furniture after the fashion of the Venetian "magnificenze" then so popular.

Florentines, directed by Ferdinando dei Megliorini, collected marbles, agates, lapis-lasuli, &c., for making beautiful mosaics, ornamented with birds, flowers, and fruits, remains of which are still to be met with in the tables in several of the palaces of the time of Louis XIV. Even the very door-locks and window-fastenings became chefs-d'œuvres of execution made from the designs of the fertile Lebrun, and, at a later period, of the still more fertile Berain—"dessinateur des menus plaisirs du Roi." The superintendence of Lebrun, which lasted from 1663 to 1690, was an era of prosperity for the Gobelins. He caused pictures designed by him to be accurately copied in wool, such as "The Battles of Alexander," "The History of Louis XIV.," "The Elements," "The Twelve Months of the Year," "The Life of Moses," &c. The greater number of these subjects were embellished with ornaments in gold thread. Many other works were executed, after designs by Van der Meulen, Joart, Bolo, Baptiste, Auguier, and other contemporary artists.

In 1690 Lebrun died, and Migaard succeeded him as chief painter to the King and director of the Gobelins.

The practice of his profession engrossing too much of his time, the King gave him as coadjutors La Chapelle and Bessé, architect and controller of the Royal buildings.

The first years of the new administration were fruitful. A school of design was established, directed by Tuby, Coysevox, and Sebastian Leclerc, and very important works were commenced; but the reverses which took place towards the end of his reign compelled Louis XIV. to reserve his money for the defence of his country. When peace was ultimately re-established, the production of the Gobelins became more brisk; but from this time the "Royal manufactory for Crown furniture" gradually lost its specially comprehensive character, to become only a manufactory of tapestry and carpets. The painters, sculptors, goldsmiths, and workers in mosaic gradually disappeared; it was no longer a school of arts and luxurious manufactures, as when under Lebrun. Through the penury of the Treasury, in 1694, the prosperity of the manufacture declined, and in the following year a number of workmen and pupils were discharged. Under the reign of Louis XV. the factories were closed, and the works totally stopped for a time, to be taken up again and cherished at fitful intervals.

The chief pieces executed at this date, and indeed until the end of the reign of Louis XVI., were, The Four Seasons, after Mignard; the history of Esther, and that of Jason and Medea, after de Troy; many scenes from the New Testament, after Jouvenet; copies of pictures from the Vatican, after Boulloque; the Twelve Months, after Lucas van Leyden; the history of Moses, after Poussin; a set of curtains in silk, with a gold ground, after Boullouque, Baptiste Monayer, De Fontenay, Audran, and others; eight scenes from the New Testament, after Restout; the history of Marc Antony and Cleopatra, a set of allegorical pictures for the Chancellor's residence, after Coypel, Restout, and others; eight Indian subjects, after Desportes and others; the Field Sports of Louis XV., in four pictures, after Oudry; twenty-one subjects, from Don Quixote, by Coypel; a set of mythological and pastoral subjects, by Boucher; the Siege of Calais and the Taking of Paris, after Barthelemy; many subjects from the history of Henry IV., after Vincent and le Barbier; the Continence of Bayard, after du Rameau; the Assassination of Admiral Coligny, after Suvèe; the Death of Leonard de Vinci, after Menageot; and the Triumph of Amphitrite, after Faraval. The tapestry of Esther, and that of Jason and Medea, given to the King of England, are said to be still at Windsor Castle.

In 1749 great changes were made in the looms; the cartoons were no longer cut up and placed under the warp, but behind the workman, where they could be clearly seen. The picture was traced on a sheet of tracing-paper, which was fastened by hand in the same way that the design had formerly been fixed. These improvements were introduced by Neilson, one of the ablest "heads of departments" who has ever laboured in the old factory on the banks of "the Bievre." In spite of his improvements, and others devised by the ingenious Vaucanson, the Royal manufactory suffered about this time greatly from dissensions, which arose between Oudry, the painter, who virtually acted as manager, and other artists, whose works were being reproduced under, as it was alleged, his misdirection. These dissensions were happily put an end to by the appointment of Boucher to fill Oudry's place, upon the death of the latter, in 1753.

During this time the department of the Savonnerie, like that of the Gobelins, followed the taste and partook of the style of the period, and the works of Louis XIV. were already greatly modified from their old noble style, when the political struggles of the end of the last century almost threatened the very existence of these beautiful creations. Scarcely had these sad days for art arrived, before hands were laid on the chefs-d'œuvres of the past upon the excuse that they exhibited emblems of the old form of government; and a jury of artists and other "sans culottes" was formed, consisting of Prudhon, Duneux, Percier, Bitaubè, Moette, Legouvè; Mouvel, the actor; Vincent, the historical painter; Belle, director of the Gobelins; and Duvivier, director of the Savonnerie.

This jury had the audacity to condemn—for singular reasons, principally political—a long list of works, in the creation of which some of them had aided. As to the Savonnerie, that was still worse; there they sacrificed all the finest patterns and productions, except two harmless carpets with flowers. The manufactory which under Louis XIV. numbered 300 workmen and weavers could, in the depth of its tribulation, obtain only forty-six signatures to the following sad petition:—

"Citizen Minister,—We venture again to lay our misery before you. The national Treasury does not make the payments you have ordered for our benefit. For 125 days of salary due to us we have only received five days. Without clothes, food, or credit, it is impossible to live. We are in despair, and we beg you to give us the means of living elsewhere if you cannot support us here."

Until the reign of Louis XVI. a settled system was followed for executing hangings in sets. Each subject formed a suite of tapestry of different heights and widths adapted to the different rooms which they were intended to decorate in succession.

For some years of the reign of Louis XVI. tapestry had been made by contract, there being two "haute lisse" and one "basse lisse" contractors. The King paid on delivery for the tapestry ordered; he lent the factories and looms, and advanced to the contractors the linen web, the wool, and the silk. The revolution of '89 led to great changes in this manufacture; in 1791 workmen were paid by the year, and in this year also were suppressed the various corps d'états which Colbert had established for the sole manufacture of tapestry.

In 1792, at the suggestion of the Minister Roland, the school of design established by Colbert was abolished, and, though the factories were not altogether closed, payments were suspended, as we have seen by the unhappy workmen's petition, during the political agitation which distracted the close of the eighteenth century.

This disorganisation lasted but a short time, since in the year 1802 the manufacture was re-established, and the school of design re-opened. A few of the artists returned, but pupils did not re-enter in numbers until the year 1809.

In 1805 Napoleon I. made up his mind to revive the manufacture, and to adopt its products as the chief decoration of his palaces. He began with the Gallery of Diana at the Tuileries, and speedily caused to be set in hand at the establishment some twenty or more large pictures representing the principal historical scenes in which he had played the leading part. A practical school of dyeing was founded; and chemistry, in the honoured persons of Chaptal and Berthollet, was brought to the assistance of the director of that school, the talented and useful M. Roard, a worthy pendant to Brongniart, at the rival Imperial establishment at Sèvres.

Under the Restoration the Royal manufacture was well sustained, and amongst a series more or less specially devoted to the glorification of the house of Bourbon there shows out with peculiar lustre the noble reproductions of the Medecis' Ruben's pictures of the Louvre. Louis Philippe in his turn proved himself a right Royal patron, admirably completing the works commenced by his predecessors; and up to the present time a steady progress has been maintained in every department, reflecting the greatest credit on M. Chevreul, the head of the dyeing establishment, and on M. Badin, the present "director," with whom I enjoyed several opportunities of discussing the magnificent figure made by the Gobelins establishment on the present great occasion. He assured me of the lively interest at all times manifested in the productions of the Gobelins by the Emperor Napoleon III., and warmly acknowledged the great assistance he had now for many years received in the artistic department from my respected colleague on the juries of the last three Universal Exhibitions, M. Dieterle.

In the above notices I have been constrained to omit much of very great interest. My deficiencies may, however, be easily made up for by consulting the excellent "Notice Historique sur les Manufactures Imperiales de Tapisseries des Gobelins et de Tapis de la Savonnerie, par A. L. Lacordaire, Director," &c.; "Paris, 1853."

I do not purpose entering in this report into the technical processes by which the Gobelins tapestries are produced; partly because they may be so much better understood from even a hasty visit to the manufactory (which is one of the well-known sights of Paris) than they could be from any written description, and partly because they have been so admirably and so frequently described by others, and notably in the above-mentioned work by M. Lacordaire.

A few words, however, on that part of the subject which generally escapes the notice of the visitor to the Gobelins—the arrangements made for dyeing all the wools used for the Imperial tapestries, carpets, and furniture stuffs at the present time—may not be out of place or useless. I therefore condense, in great part, from

the excellent description of the establishment given in the first three numbers of M. Turgand's fine work, "Les Grandes Usines," a few particulars of the current practice.

The dyers' workshop in the Gobelins manufactory is, without doubt, the first dyeing establishment in the world; not, of course, from its extent, but on account of the perfection of the processes and the infinite number and systematic preservation of the "nuances" or shades of tints therein produced. M. Chevreul, member of the Institute, is now, and has long been, its director, with M. Decaux as sub-director. The value of the treatise by the former, "On the Simultaneous Contrast of Colour," is acknowledged by every artist. The workshop is simple, being composed of a drying-room, of a large chamber with coppers for scalding and dyeing, and of a subterranean passage leading to seven furnaces, in which the colouring liquids are boiled. Under the windows flow the sluggish waters of the Bièvre, grey, opaque, noisome, creeping slowly between two stone quays, and with its slimy waters charged with all the refuse which flows from the various manufactories upon the little river's banks.

The following is the process carried on in the dyeing-room:—The wool is mostly Kentish and is spun at Nonancourt, in the department of the Eure. After having been selected and inspected with the greatest care by the firm of Vulliamy (the agents through whom they are procured), the fleeces are classified, on their arrival at the Gobelins, into very fine fleeces for the Savonnerie and Beauvais work, and those a little less fine, and ultimately differently spun, for converting into Gobelins tapestry. When the yarns have been examined by M. Perrey, chief of the works, they are submitted to a graduated cleansing, according to the colours which they are to receive. Passed through whitewash, subcarbonate of soda, or simply through bran, they are given more or less affinity for this or that tint, according to the duration of the proceeding and the nature of the liquid. The scouring operation requires watching with great care, especially during the bath of subcarbonate of soda, of which the temperature can never exceed a certain fixed limit, without a risk of spoiling the wool. The skeins, passed over long sticks called "lisoirs," are then plunged into square boilers of iron, which hold the mordant, containing more or less alum or tartaric acid, according to the dyes required. After this they are plunged into a bath of colour. The dyeing of the Gobelins has nothing in common with that of establishments, which produce some a single colour, as blue or black, others various tints, but limited in range of shade. Such dyeing as this could be executed by inferior workmen; but to produce not only the immense variety of colours, but the twenty or thirty shades of each colour, required for this manufacture, demands the employment of real artist dyers. At the Gobelins the object is to produce only colours of a "good dye"—that is, permanent, or "fast," colours—the difficulty is therefore much greater than in the case of most private firms, who only strive after effect. It is chiefly in the clear colours that it is important not to make a blunder. Sad to say, a great number of beautiful pieces made at the beginning of the nineteenth century have been simply ruined by the decomposition of certain dyes, which have turned quite brown, whilst others have faded altogether. Thus the three or four years' work of an artist may be rendered useless by the neglect or mistake of a dyer; but under the skilful direction of M. Chevreul this danger no longer exists; and the chef-d'œuvres now produced will, it is confidently believed, last as long as organic matter can be expected to exist without losing their value by change of hue. Each tint at the Gobelins, according to its position in M. Chevreul's well-known scale, is graduated in twenty-four tones, from the deepest to the most delicate—from deep red to blush rose tint, from the deepest slate gray to the lightest mother-of-pearl. Those skeins placed side by side in the order of their tints have a most pleasing effect. The gradation between skein and skein is little perceptible to anyone but a workman; but the dyer is not only able to observe it when out of the bath and dry, but even whilst still damp and soaking in the boilers.

The following is the process when only a simple colour is required. The bath is charged with the deepest colour of the scale required; the dyer, having placed upon his sticks the skeins which are intended to be of the deepest tint, plunges them into the bath, watches them, raises them up, hangs them on uprights at his right hand, replunges them in the copper, examines them, and notes the time during which they are soaked or dry. When he considers them to have reached the desired stage they are withdrawn and spread out, replunging them afterwards, if required. During this time the bath gets weaker and weaker; if it loses its colour too quickly, more colouring matter is added. The liquid, becoming less charged with colour, gradually reaches so pale a tone that the twenty-fourth tint becomes almost white. It is in these later operations that a sure eye and skilful hand are required; the wool must be completely and thoroughly dyed, and yet at the same time possess the delicacy of shade required. Great care is shown in keeping the skeins, when fully dyed, well sorted, and yet easily accessible, so that there may be no impediment when the weaver has to select his woollen pigments for his day's work.

It is by such an elaborate system alone that works of the perfect pictorial success which must be recognised in the Gobelins tapestry of the present Exhibition can be achieved. Although no one piece in this year's display is as striking as "The Assumption," after Titian, exhibited in 1862, there is a far greater variety of style illustrated, with an even greater amount of harmonious colouring. The striking feature of the present Exhibition is the advantage which it has derived from the active co-operation of M. Dieterle, formerly artistic director of the Imperial manufactory at Sèvres. That distinguished artist's sensibility to the value of colour in shadow, and in what the French call "tons degradés," is quite exceptional, and sets off the pictorial *tours de force* of the Imperial manufacture to the utmost.

The largest piece of the Exhibition is a reproduction of the "Aurora" of the Villa Rospigliosi, by Guido. Perfect, no doubt, as a reproduction of the copy made in oil from the original fresco, this picture fails to render either the soft luminosity of a fresco or the intensity of tone of an oil picture, treated as an oil picture should be. In point of fact, it is almost impossible to satisfactorily copy a fresco in oil; and this tapestry, being made from such an unsatisfactory translation of the original, fails, of course, in the particulars in which the mistranslation was defective. In the specimen which hangs beneath the Aurora, taken from the beautiful oil picture, by Titian, "Sacred and Profane Love," in the Borghese Gallery at Rome, a much more successful result has been obtained—all the richness and transparency of Titian's luminous palette having been perfectly reproduced. As a masterly illustration of how works of art of the highest character may be allied with the furnishing and hangings of a noble apartment, the student may be invited to carefully study the border by which M. Dieterle has surrounded this beautiful picture. On each side of the "Sacred and Profane Love" hang two *dessus de portes* (or, rather, will hang, for one of them is as yet incomplete), which unite the utmost brilliancy and gaiety of colour with perfect repose and absence of "garishness." The colour of the ground of these little panels is extraordinarily successful, and illustrates admirably a favourite theory of the artist that harmony can never be produced by the opposition of complementaries of equal intensity. In gradations of unequal intensities the eye feels an incessant sense of changeful illumination, which gives a life and grace opposed to the fixed and staring effect which more equal balancing of intensities invariably produces. It would occupy too much space in this report if I were to dwell too long upon the subtleties of polychromy which this year's exhibition of the Gobelins displays. The ordinary spectator will feel them, if he may be unable to trace and unravel them; and the intellectual exercise of picking them out for himself will be invaluable for the decorative artist. I cannot, however, refrain from dwelling upon the set of three hangings of Beauvais manufacture which hang upon the left-hand side of the large carpet (by far the least successful of M. Dieterle's works) in the Sèvres Court. The arabesques, which are in a true French rather than Italian style, upon brilliant crimson, deep yellow, and dull sky-blue grounds, are among the most beautiful ever executed; and blend into the perfection of deep, rich, and yet vivid colouring. Too often papers, decorations, and tapestries only make rooms look uncomfortable; but I cannot imagine that a room hung with such tapestries as this, framed in ebony and gold, or in oak with ebony inlays, or in ebony with ivory inlays, or with walnut and mother-of-pearl inlays, could look otherwise than beautiful.

Around the Gobelins Court are arranged many sofas and chairs covered with tapestries made at the Imperial manufactory at Beauvais. They possess all the technical and artistic excellencies of Gobelins tapestry, but it is impossible to feel that the designs are often suitable for the purposes to which the pieces of furniture they decorate are usually put.

In France alone we meet with attempts to rival the Imperial manufactures of the Gobelins and Beauvais, and in many cases the rivalry is well sustained. In this line of production for "furniture stuffs" the great house of Arnaud Gadin, of Nismes, stands conspicuous, and well merits the high reward the jury have given to it. At the same time the designs are, to my taste, certainly too pictorial for many of the uses to which the stuffs are applied. For instance, to find oneself sitting on a pair of doves or darts, or a shepherd and shepherdess, or on a waterfall and ancient château, is not a happy although a by-no-means uncommon sensation in France. Even to be suppposed to be crushing a bouquet of lovely flowers does not seem sensible. What is delightful as a picture mounted upon a screen is not so well on the back of a chair, and still less is it well when it forms the seat. These distinctions are not sufficiently felt by the French, who, in spite of their Republicanism and Imperialism, accept anything if it has but the "chic" of the ancient *régime*, and the consequence is that frequently much of their laborious dexterity is misapplied. Another point as to which they are often careless is to prepare for stuffs and hangings, which must be folded irregularly, designs which to have any meaning at all must be fully displayed. I mention these points in connection with such a house as that of Arnaud Gadin not because that house is specially guilty, but simply by way of a hint that the best and most celebrated are not free from reproach on this head. The houses of Walmez, Duboux and Dagyr, and of Berchoud and Guerreau, of Paris, and that of Bernard Laurent, of Amiens (the last especially in "etoffes epinglés"), contribute specimens in which the dyes are beautiful, and the Jacquard weaving unexceptionable. For perfect pictorial work, I was especially struck by the productions of Duplan and Co., of Paris. Requillart Roussel, and Chocquel, also of Paris, sustain by a brilliant display a well-earned reputation, as do Sallandrouze, Père et Fils, of Aubusson and Paris. They exhibit, much as they have done before, stuffs for furniture beautifully executed, and portières covered with well-executed but misapplied flowers and garlands. Morceaux, of Paris, has some good and some very crude specimens. Mazure and Mazure, of Roubaix, is very strong in reps, poplins, and damasks for upholstery.

In other countries than France, amongst the first of the exhibitors in the department of stuffs for curtains and upholstery generally must certainly be placed the house of Haas und Sohne, of Vienna. For good taste and perfect manufacture of every variety of this class of goods they stand conspicuous; and their display altogether is an honour to their country, and a profit also, since their various establishments give employment to no less than 2500 workmen. Their portières and curtains are of especial merit, and the skill with which their designers manage to make the most of the silk they combine with wool in mixed fabrics is truly remarkable.

In stamped leather, or leather for covering furniture, there was no novelty. Dulud, in France, has rather fallen off; and an exhibitor named Boucart has advanced. I did not observe any good specimens from other countries.

The Algerian mats are good, though coarse. They are generally very low in tone, but harmonious; the colours rarely more than red and yellow. The Portuguese are satisfactory when in one or two ingrained colours; but when superficially dyed in bright colours the tints become fugitive and the general effect vulgar. The best of all the mats in the Exhibition are the Indian, both in make and appearance. The patterns are quite classical in style, and recall the best types of mosaic for flooring purposes. The grass mats from Palghaut, on the Malabar Coast, made by Koravan Mayan, are of extraordinary strength, durability, fineness, and flexibility. They may be bent almost double without injury, and in the hot weather they are very much used by the natives and Europeans (when once they have found out how comfortable they are) for sleeping upon. Other good Indian grass mats are made at Midnapore, near Calcutta.

In indiarubber and straw matting I noticed no particular novelty; the kamptulicon and linoleum of England were good, both in principle as to decoration and in manufacture. In oilcloth and floorcloth England appeared to me to stand *facile princeps*. Nairne, of Glasgow, with Mr. Owen Jones's help, cut a capital figure. Crosnier and Rose, in France, were respectable—the former especially in his small-patterned goods.

In furniture stuffs of cotton there was a keen competition in the article of muslin curtains between the French (of Tarare) and Saint Quentin, and the Swiss. After much controversy the scale turned, and I think justly, in favour of the former. In chintzes and cretonnes the French excelled, and in the patterns for the latter especially some admirable designs were exhibited, both from Rouen and Muhlhausen. The English in this department did not adequately put forth their strength.

The Indian palampores and block-printed cottons generally were excellent in pattern, as were the embroidered stuffs of all kinds adapted for hangings. The embroideries in silk from Turkey, Greece, Egypt, Algeria, the Caucasus, and China were all full of character, and presented most interesting types, both of form and colour, each harmonising perfectly with the furniture and architecture of the respective countries.

Upon the whole, taking all the sections of this class into account, I felt that the English had the best of it in carpets (both woven and felted), matting generally, kamptulicon, and floorcloths, and the French in all the other principal departments.

The English furniture stuffs were far, however, from despicable. The mixed-fabric goods of several manufacturers, the hangings of J. and J. S. Templeton, the mediæval embroideries of Heilbronner, of Regent-street, and probably many other such specialties, possessed admirable features, both of manufacture and style; but, as they were classed for the most part in other sections, their good qualities will no doubt be pointed out by judges more competent to do justice to their merits than I can pretend to be.

TELEGRAPH APPARATUS AND PROCESSES.—Class 64.

BY ROBERT SABINE, TELEGRAPH ENGINEER.

The telegraph apparatus shown in the Paris Exhibition contains few novelties, but indicates satisfactorily the quiet progress which has been made in this art-science in the five years which have elapsed since the last London Exhibition. Were it not for such exhibitions as these, the task of tracing the advancement made in telegraphy within certain periods would be an almost impossible one.

In 1851, Wheatstone's single needle instruments were used, almost exclusively, on the English lines, Morse's electro-magnetic recorders, upon the American and Swiss, Bréguets dial telegraph upon the French railway, and Froment-Chappó's double pointer upon the French state lines. The great telegraph novelty, in 1851, was the copying system, of which specimens were shown by both Bain and Bakewell. The public attention was attracted to them in admiration of their performances whilst experience had not yet shown their impracticability. After the Exhibition, the idea of telegraph engineers became more generalised; and we find the fruits of this in the Paris Exhibition, four years afterwards, where the Morse apparatus was shown in a state of transition from the form in which it left the hands of its inventor, towards the high degree of perfection which it has subsequently reached. In 1862 the honours were divided between the Morse and the dial telegraphs The Morse, adopted almost by all the administrations of Europe, had offered inducements to the manufacturers to devote their energies to its perfection, such as we see it to-day from the workshops of Siemens and Digney. The dial telegraphs had received an impulse from the growing employment of private lines in the metropolis under the energetic influence of Professor Wheatstone.

In the Paris Exhibition of 1867 there is a significant inclination on the part of the French inventors to bring forward type-printing telegraphs. This is the result of the great success which has been attained by Mr. David Hughes's telegraph—the only instrument of similar importance which has not figured in previous exhibitions. This system, introduced from America, promises ere long to rival the Morse in the extent of its employment.

Every day we are advancing towards the possession of standards of merit. Telegraphy is growing, from stage to stage, more practical, because those inventions which do not come up to the established standard find their level sooner than they did before these standards existed. Thus the single needle telegraphs, which, during long years, held their own in England, have almost entirely died out. The infinite host of fantastical schemes of submarine cables and methods which we heard of in 1862 have been frightened out of existence by the great reality of the Atlantic cable. And with such a standard as the Hughes type-printer, the numerous inferior schemes which emulation has called or recalled into being in this Exhibition will, infallibly, in a short time retire into oblivion.

The writer proposes to classify the subject-matter of the following report in sections, each containing a special group of materials or apparatus, and not according to the order in which they appear in the catalogues. A similar classification was adopted in the jury report on electrical instruments in the London Universal Exhibition, 1862, and was found to have the advantage of facilitating comparison and reference.

CONSTRUCTION OF TELEGRAPH LINES.

SUBMARINE TELEGRAPHS.

The submarine telegraph is not so well represented in the Paris Exhibition as the brilliant success which this branch of art has achieved within the past year would have led us to hope. It is sincerely to be regretted that the public, in this Exhibition, have been denied the gratification and advantages of learning the methods and seeing the apparatus employed in making, laying, and testing the Atlantic cables. The engineers engaged in this scheme have not only laid the Atlantic cables, but have, at the same time, established the future fortunes of submarine telegraphy, which is, perhaps, of still greater importance. In exhibiting their remarkably beautiful appliances they might not have found, it is true, any direct pecuniary profit to themselves; but they would have had the satisfaction of knowing that they were enlightening thousands of inquiring minds on a subject of universal interest.

William Hooper, London, exhibits a case containing various specimens of his vulcanised indiarubber cables. Mr. Hooper's process consists in the consolidation of a coating of pure underneath a coating of vulcanised indiarubber. He attains this by covering the conductor first with two coatings of pure rubber, then with a coating of some substance called a separator; and, lastly, with vulcanised indiarubber. The duty of the separator is to prevent the sulphur of the outer coating penetrating the rubber of the interior. The whole is then submitted to a temperature of from 135 deg. to 140 deg. cent., by which the rubber is reduced into a compact coating.

The lengths of cable which have been made by this process have behaved, so far, very well. Their insulation resistances are great; a result, however, ascribable not so much to Mr. Hooper's peculiar process as to the repeated coatings, laid one upon the other, which compose his cables, and to the specific resistance of the material itself. Any other manufacturer using the same thickness of rubber would obtain the same insulation; but the advance made by the method in question is in the favourable conditions under which the dielectric is applied to ensure its durability.

To the practical telegraphist so high a degree of insulation is not necessary. To the electrician, however, it is a great boon, enabling him, when the insulation of the whole wire is uniform, to determine the place of a very minute fault with great accuracy and ease, as he can neglect, in his calculations, the shunt-resistances due to the leakage between the fault and the ends.

The physical properties of indiarubber are such that it may be heated to a higher degree than is possible with gutta-percha without materially altering either its molecular or electrical conditions. This is in favour of its employment in cables which are liable to be exposed to heat in transport or otherwise. The self-heating by oxydation of the iron covering, which was found, in 1860, to have injured the core of a length of the Malta-Alexandria cable during the time it was stowed in the tank at Greenwich, would have been without any detrimental effect had the cable been insulated with indiarubber. In stowage in dry tanks during transport cables frequently become spoiled, as was the case with four or five experimental lengths of cables of different manufacture, destined by the Government for submersion in the Persian Gulf in 1863. In such a position the cable proposed by Mr. Hooper would, no doubt, be found to be of great practical value.

Until Mr. Hooper introduced his peculiar process of insulation by pure and protection by vulcanised indiarubber the difficulty of joints had been the greatest drawback to the employment of this material. This difficulty has now been got over, and it remains for time to show if indiarubber, which in air is not more durable than gutta-percha, behaves equally well under water. If so, this material may have an important future in submarine work.

In gathering data for the establishment of the merits of his system, Mr. Hooper has made a series of quantitative measurements of the electrical conditions of a compound indiarubber covering under different conditions of heat. Thus, a coil of 3394 yards was tested at different temperatures, between 14 deg. and 100 deg. cent., at intervals of 5 to 6 deg. The results of the series is the establishment of a constant for calculating the effects of temperature on the insulation of indiarubber. This constant is found to be equal to an increase of the conducting power of the 0·1034 part for every 1·66 deg. cent. (= 3 Fahr.)

Mr. Hooper does not exhibit the apparatus which he proposes to use for making joints, nor does he state whether it would be applicable at sea, where it is sometimes necessary to make a joint between deep-sea and shallow-sea ends in a small boat.

Rattier and Co., Bezons, near Paris, show various specimens of submarine cables, insulated with gutta-percha and protected by hemp and iron wires. The first cable made by Messrs. Rattier for submarine purposes was that laid, in 1859, for the semaphore telegraph on the coast of Brittany, and which is still at work. Messrs. Rattier likewise show specimens of the cables, with one and two conductors, made for the colony of Senegal in 1861, and for Cochin-China in 1860 and 1864.

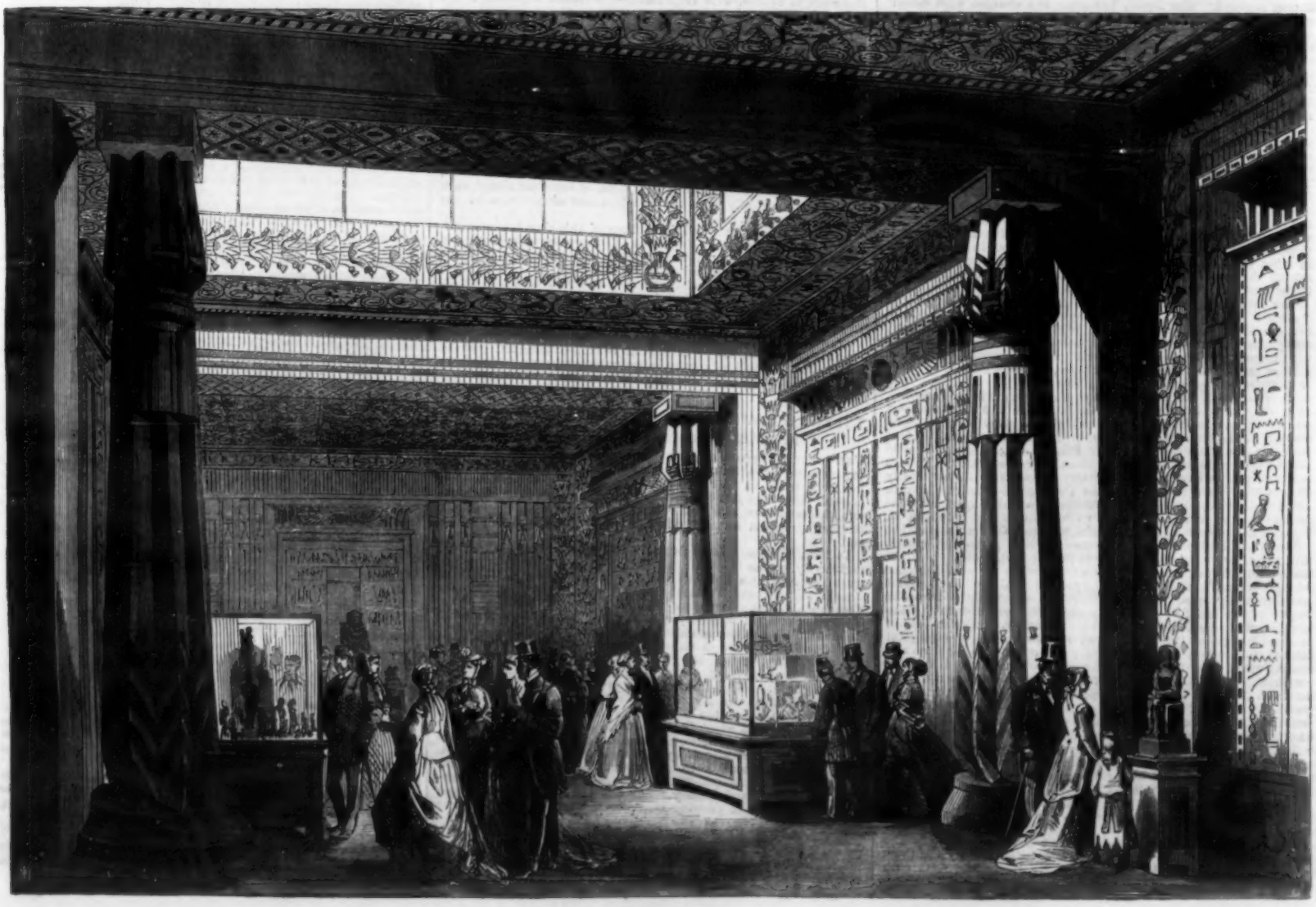
The gutta-percha core made by Messrs. Rattier is of excellent quality. That made for the French administration of telegraphs contains, per knot, 22 kilogrammes of copper and 33 kilogrammes of gutta-percha, in two coats, with intermediate compound. The writer was allowed to test the electrical conditions of some lengths of this core which were awaiting approval by the Government electrician. The resistances were extremely uniform, and in no case was the insulation less than 700 millions-units per knot, in water at 14 deg. cent. The wire resistances were also such as to show that the French manufacturers are in a position to procure copper of high conducting power.

W. T. Henley, North Woolwich, shows a case of cable samples with sections. In addition to the cables shown in the London Exhibition of 1862, we have the following:—

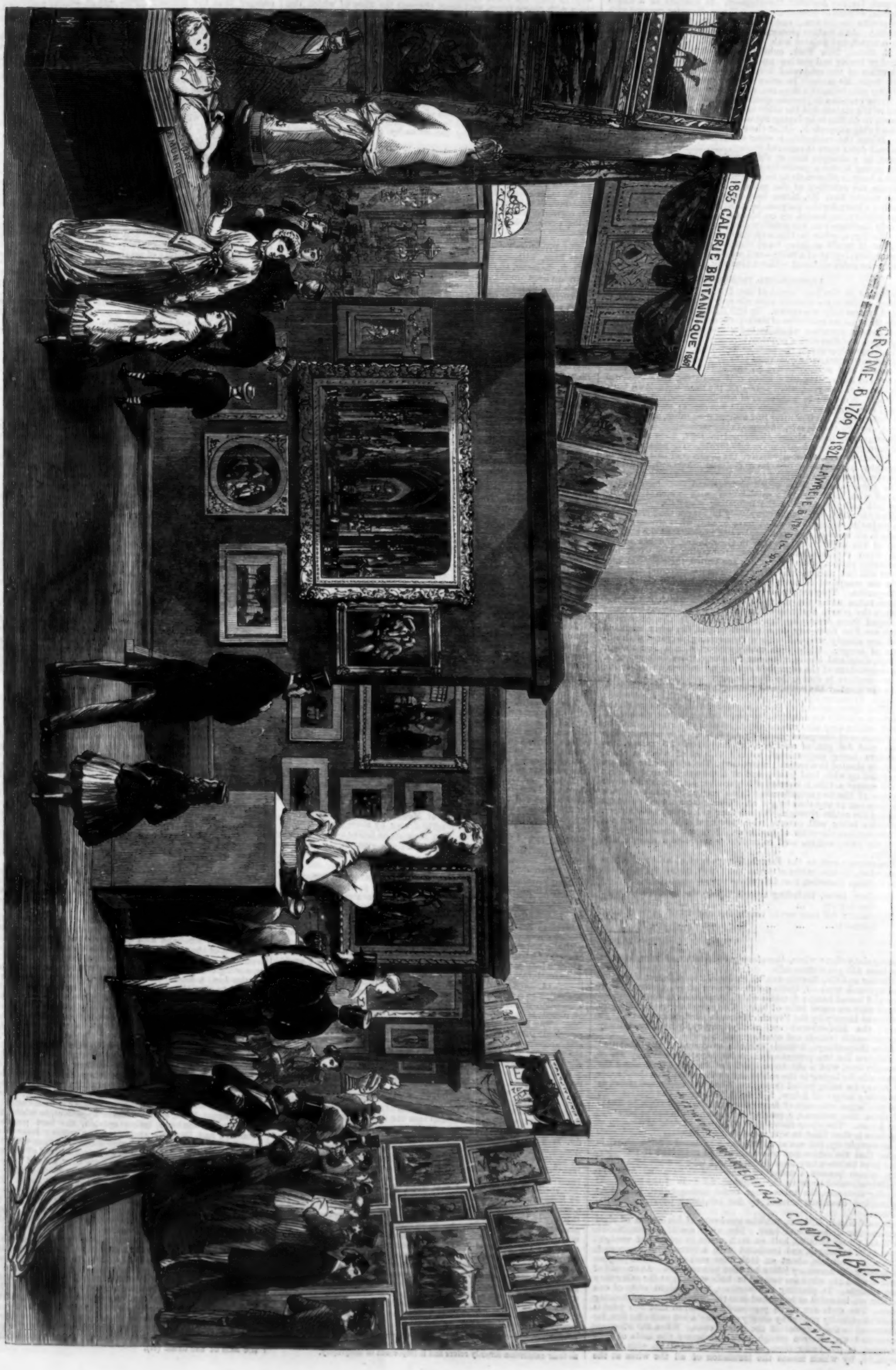
Cables.	Laid.	Conductors.	Length in Miles.	Weight in Tons.
Denmark	1863	4	12	124
Norway	1863-6	1	60	177
Persian Gulf	1863-6	1	1615	630
Ramsgate	1861	6	23	207
Italy and Turkey	1864	1	61	196
England and Ireland ..	1865	7	86½	867
Prussia and Sweden ..	1865	3	53	435
Wexford	1865	4	17½	231
River Plate	1866	3	80	473
Cooke's Strait	1866	3	53	449
Behring Sea	1866	1	601	784
Norway	1866	1	7	10
England and Hanover ..	1866	4	240	2465

Siemens Brothers, London, also show a case of cable samples amongst which are lengths of heavy as well as of light cables. A fine shallow-sea cable is shown by these manufacturers, made by them for the Egytian Government. It consists of six separate conductors, each of one copper wire, 1·6 mm. diameter, covered to 5·5 mm.

MODEL OF THE TEMPLE OF EDFOU IN THE PARK OF THE LATE PARIS INTERNATIONAL EXHIBITION.



INTERIOR OF THE TEMPLE OF EDFOU.



THE BRITISH PICTURE GALLERY IN THE LATE PARIS INTERNATIONAL EXHIBITION.

with gutta-percha; the whole being protected with tarred hemp and sixteen galvanised iron wires, each 5 mm. diameter. For war purposes Messrs. Siemens show a cable, of which considerable lengths have been made for the Austrian Government. It consists of a single conductor, a strand of three steel wires, 0·75 mm. diameter, covered with gutta-percha to 3·5 mm., and protected with hemp and copper sheathing. As a further protection, sometimes the exterior of this cable is taped, and painted with white lead.

S. E. Morse, New York, exhibits a model to illustrate a new method of laying and picking up submarine cables. The inventor is a brother of the celebrated inventor of the recording-apparatus which bears his name. In order to overcome the inconvenience of not being able to raise a deep-sea cable to the surface at any point, Mr. Morse proposes to provide special points of slack, which can be raised to the surface and the cable underrun. The way in which he proposes to do this is by laying the cable to a certain distance, where a second ship supports it, whilst the cable-ship continues the paying out. When the cable-ship is clear away, and the cable considered to be well down upon the ground on each side, the second ship is to proceed in a straight line, at right angles to the direction of the cable, easing it down gradually at the end of a rope or chain, to which a buoy is afterwards to be attached. The buoy is intended to facilitate the refinding of the cable, if it should be wanted. The writer thinks that Mr. Morse has scarcely been well advised in selecting a buoy for the purpose in question, because it would, in all probability, be hauled up on board some passing ship, and thus not only the trace lost, but possibly also the cable, if it were a light one. To lay a cable in this way would cost a great deal of extra line; but it would at least leave slack—a most essential point for the successful laying of a cable—and would increase the chances of hauling the cable on board without breaking it.

UNDERGROUND TELEGRAPHS.

Referring to the jury report of the London Exhibition, 1862, we see that, whilst other systems were strongly represented, one underground system only was shown. In this Exhibition, five years afterwards, there are six exhibitors of underground lines, plainly indicating the increased attention which is being devoted to this branch of telegraphy, and therefore a growing necessity for it.

The telegraph-posts in the metropolis are becoming overcrowded. To erect new wires endangers them; to erect new posts beside the old ones is still more offensive to the eye than the present ones. The evils of this system were made evident during the snowstorm in February of last year, when nearly all the lines were down upon the roofs. Were we in possession of an efficient method of underground telegraphy such accidents could not occur; and, indeed, we may, before long, see line after line disappear in tubes, in cables, in sewers, anyhow that is safe, underneath the surface.

Underground lines, almost abandoned in 1862, have since that date been creeping gradually again into favour. The reason is, that the difficulties which formerly barred the progress of this branch of telegraphy have, one by one, been materially lessened, whilst the inconveniences of the overhead system have become more apparent.

The principal difficulties which underground lines have had to contend with have been the carelessness with which the wires were laid and the decay of the insulating materials. These difficulties have been met more completely in France than elsewhere. The prejudice which the French have against wires crossing their streets in all sorts of inelegant angles has necessitated the employment of the underground system in their towns, and has shown that, when sufficient care is taken in burying the wires and in ensuring perfect cables before they are buried, their electric conditions will last unimpaired for years. The underground cables in Paris are composed of seven cores of copper wire, insulated with gutta-percha. They are placed in the sewers, in the catacombs, and in iron tubes under the streets. The cables which are carried through the sewers are inclosed in lead tubes to prevent the gases developed there destroying the gutta-percha. In the catacombs, which are free from any development of gas, the seven insulated wires are simply wrapped with a tape serving, prepared with sulphate of copper. Eight such cables, supported in a zinc trough, 100 mm. deep and 50 mm. wide, are led along these dark passages. The temperature of the catacombs seldom varies from 12 deg. cent.; the atmosphere is damp, the floor being generally only a few feet above the level of the wells, and water percolating always through the rock. These are the best conditions possible for the preservation of gutta-percha-covered wires in air. For the lines underneath the streets iron tubes are employed to protect them against mechanical injury, whilst they also prevent the circulation of air and retard the deterioration of the gutta-percha by oxydation. The tubes are like those used for gas, of cast iron, in lengths of 2·3 metres, the diameters being proportioned to the number of wires in them. They are planted in a trench 1 metre deep. The separate lengths are connected up with lead joints, and at distances of from 50 metres to 150 metres a tube is inserted of larger diameter, which slides over the ends of the two neighbouring tubes, so that by pushing it back the lines can at any time be got at. These places are also used for drawing the cables through. This is done in lengths of 400 metres, the cables being well covered with powdered talc, to reduce the friction against the sides of the tubes. Five men are employed to plant the lines, and are said to be able to complete a statute mile per day.

The average cost to the French Government of a line of sixty-three wires, in nine cables of seven wires each, contained in an iron tube 120 mm. diameter, is as follows:—

1. Cast-iron tubes, including trench, laying down, and covering up	8000f.
2. Nine cables (of each seven conductors), at 2900f. per kilometre...	26,100f.
Total	34,100f.

Taking sixty-three wires, therefore, per kilometre of wire, 541f., or less than £35 per statute mile.

Rattier and Co., Bezons, exhibit cables of two different kinds for underground work—1, Gutta-percha-covered wires, protected with tape and tarred hemp; 2, cables which, in addition to these, are protected with an outer tube of lead. The cotton-covered cables are employed largely by the French telegraph administration on their lines; the lead-covered are mostly employed by the railway companies for tunnels and crossing stations.

Léon Delperdange, Brussels, exhibits specimens of the tubes used in Belgium for the protection of underground lines. They are of wrought iron, with a slit three fourths of an inch broad along the upper side for laying in the cables and saving them from the chances of injury by being pulled through. When the cables are placed in the tube a length of ⊥-iron, *b*, *b*, fig. 1, broader at the bottom than the slit, is put into each of the sections and fastened there by means of three iron wedges *c*, *c*, passing through holes in the upper rib of the ⊥-iron. The space above the latter to the height of the top of the tube is then filled in with some water-tight cement, which seals it up completely, but can at any time be removed with a chisel in order that the cables may be taken out and examined, if necessary. The joint between two separate lengths of tube is made by a ribbed clip, which presses a collar of vulcanised indiarubber over two slightly-elevated rings in the neighbouring ends of the tubes. At regular distances, the tubes enter round testing-boxes, formed by cylindrical chambers covered by flat lids, with packing of india-rubber.

Donald Nicoll, Kilburn, exhibits specimens of his system of rigid sections for underground lines. The wires are of copper, No. 16, B.W.G., placed parallel, half an inch apart, in troughs of wrought iron, 11 ft. in length, and insulated with a bituminous compound. The wires protrude, about an inch from each end, for the purpose of making the necessary joints between two sections. At one end of each section the wires are twisted in hollow coils; at the other they are straight. In planting the sections, the straight ends of one section are intended to be pushed into the coils of the neighbouring ones. The ends are to be previously tinned, so that the joint is made electrically perfect by simply applying a hot soldering iron for a moment to the outsides of the coiled ends. When the wires are connected up, an iron trough, which embraces the ends of both troughs, is put under them and the space filled up with melted asphalte, by which means the insulation of all the wires at the junction is effected at once, requiring little skill or practice on the part of the workmen employed. This is certainly a great point in favour of the proposed system. Mr. Nicoll has adopted a simple and sure way to keep his wires apart in the melted bitumen. He covers them with coarse hemp, well dried, through the fibre of which the melted bitumen penetrates. Mr. Nicoll believes that the transport of these rigid sections with any number of wires insulated by this method would be a matter of no difficulty whatever, and that the planting, joining up, &c., could be done much more rapidly than the same length of overland line could be erected.

A. Holzmann, Amsterdam, exhibits a length of line resembling the above in general appearance. Instead of planting rigid sections, however, Mr. Holzmann lays down his troughs first, then places the wires in them, divides them by glass supports, and, lastly, pours in melted gas tar. The trough is afterwards covered up with a lid, which is wedged on. Half a mile of such line is at work between Amsterdam and Abconde, and is said to work very satisfactorily. But the method of dividing the wires by glass supports seems objectionable.

These systems are not new: they have been tried repeatedly in France and in England, but failed, partly because the material employed for the insulation was too brittle, partly because insufficient care was taken to keep the wires apart. But, with the benefit of all the experience and failures of other inventors, it is to be hoped that both Mr. Nicoll and M. Holzmann may succeed in their endeavours to give us cheap underground lines, by which they will be doing a most welcome service to telegraphy.

OVERHEAD TELEGRAPHS.

The Prussian Telegraph Direction, Berlin, exhibits two complete lines, with station introductions. One of these is wire, of 5·3 mm. diameter, the other of 4 mm. The insulators used on the Prussian lines are the porcelain bells of Mr. Clark, the groove of which is made deeper and narrower, in order to make the escape of the current over the surface as difficult as possible. The bell is provided with grooves at the side and on the top. The wire passes sometimes by the one and sometimes by the other. Specimens of these connections are shown, and also of the manner in which thick wires are joined to thin ones.

The French Administration of Telegraphs, Paris, exhibits also complete lines insulated and connected in the French style. The insulators are of two kinds—those of which the porcelain is formed in a flange, screwed directly to the post, used as line supports; and those which are held by an iron stalk underneath, used as stretching insulators. The latter are the better of the two, but are not so good as either the German or the English insulators. The administration shows also an iron post, of which the upper part is rolled, + section iron, and the lower part a socket of cast iron. These posts are very strong, notwithstanding their light appearance. They are being introduced in great numbers in France; and, as is natural, are found much more practical than the wooden ones. That wood is cheap and iron dear is no reason for employing the one and rejecting the other for telegraph-posts. Let an iron post cost four times as much as a wooden one, it lasts ten times as long, and is therefore, in the long run, twice as cheap.

Siemens Brothers, London, show specimens of their tubular iron posts and the insulators used with them. The posts are composed of three parts—an upper, conical, welded iron tube; a cast-iron socket, and a buckled plate forming the base. These posts are stronger, and in every way preferable to the French ones. They are largely used in India and elsewhere, and are justly celebrated. The insulators shown by Messrs. Siemens consist of cast-iron bells, with flanges by which they are fixed against the posts. Inside the bell, a porcelain cup is cemented; and inside the cup, a hook to support the wire. Sometimes two bells are cast upon the ends of a cross-arm, with a hole in the middle, by which it is fixed to the top of the post. This insulator is made fast to the post by a single screw.

John Bourne and Son, Derby, exhibit specimens of red earthenware insulators, mostly of the double-cup form known as Varley's. For a light, cheap, well-insulating support, in the writer's opinion, there can be nothing better than that made of two cups of good, close glazed earthenware cemented together. It gives a greater guarantee against faults in the material than the best porcelain in the form of a single cup. These insulators are extensively used in England, but very little abroad.

The Spanish Telegraph Direction, Madrid, exhibits two insulators of peculiar construction attached to what is intended to represent the top of a wooden post. They are the suggestion of Mr. T. M. Zapata. This insulator consists of a taper-shaped porcelain tube, which carries a iron hook in the central hole, and is supported by a wrought-iron collar, allowing the hook to project underneath. The top of the collar is covered by an iron lid. This construction allows the porcelain to be easily changed in case of a fault.

Menans and Co., Paris, show specimens of French telegraph wire. A coil of 3 mm. diameter, with welded joints, is shown, measuring 1234 metres and weighing 68 kilo. The breaking strain is 438 kilo., or 62 kilo. per square millimetre section. Amongst the best telegraph wires exhibited are those of Messrs. Johnson and Nephew, of Manchester.* The single lengths drawn by these manufacturers exceed those of any others. They measure as follow:—

Gauge No. 3=530 yards,	weighing	281 lb.
" " 8=900 "	"	200 lb.
" " 11=790 "	"	95 lb.

Long lengths of line-wire without weld or joint are important for overhead lines, reducing the danger of the wire parting either when stretching the line, or in winter, when the wire contracts.

ELECTRO-TELEGRAPHING APPARATUS.—SENDING KEYS.

Siemens Brothers, London, and Digney Brothers, Paris, exhibit Siemens' magnet-keys. The purpose of this instrument is to telegraph with the Morse apparatus without the use of galvanic batteries. It consists of a battery of permanent steel magnets, between the poles of which a long soft iron armature is turned through a small angle. The armature has a longitudinal groove on each side, in which a length of silk-covered copper wire is wound. It is so placed that, by pressing down the handle attached to it, its polarity is reversed and a magneto-electric current induced in the wire. An opposite current, of course, is induced when the key is let go back to its normal position. The Morse apparatus used with this key is provided with a polarised electro-magnet, which retains the soft-iron keeper on either side, according to the last current sent through. In countries where the galvanic batteries either dry up rapidly or freeze this system is admirably adapted for employment.

L. Bréguet, Paris, has a magnet-key, by which, with a single permanent magnet, he is able to move the armature of a polarised Morse through a considerable resistance. He does this by quickly removing and replacing a soft-iron keeper between the poles of a permanent horseshoe magnet, the two horns of which he encircles with coils of wire which he introduces into the line circuit. M. Bréguet exhibits also a key, invented by M. Lacoine, consisting of a lever (K, fig. 2) with spring contacts front and back. The lever is connected with the coils of the apparatus, the front contact (*s'*) with earth, the back contact (*s*) with line, and a contact (3) which the line meets when the lever (K) is pressed down, but which is interrupted when the key is at rest, with the copper pole of the battery. The springs are so arranged that when oscillating the lever remains an instant in contact with both line and earth at the same time. The advantage which M. Lacoine proposes to gain by the employment of this key is, the discharge of the line between each signal and the replacing of the relay in the circuit, in order that the receiving station may interrupt the transmission in the event of a misunderstanding, and have the doubtful letters or words repeated, without waiting for the end of the despatch, as is necessary in those systems in which the relay is entirely cut off during transmission.

Another improvement in keys is shown by M. Bréguet, the suggestion of M. Vilette. Instead of the common lever turning upon an axis in the middle and striking upon anvil-contacts, front and back, M. Villette proposes to use a simple steel spring fixed upon a block of brass at one end, and terminating in a knob, for convenience of manipulating, at the other. When at rest the spring, which is in connection with the line, presses upwards against a contact-point leading to instrument and earth; but, when pressed down, this contact is interrupted and another established between the spring and an anvil in connection with the battery. This key is cheaper than the ordinary form, and is probably more durable, as the axis and bearings are dispensed with. This form of key was tried in America a quarter of a century ago; but gave place to the newer constructions.

Siemens Brothers, London, in connection with their complete submarine apparatus, exhibit a key of a new construction. The beam (K, fig. 3) is connected with the line through the terminal (1); the front contact (*d*) with the copper pole of a battery of galvanic elements. The back of the beam rests upon the block (*e*) of a spring contact (*s'*), which presses against the screw point (*s*) when the lever (A) is turned round, but is separated from it by the agate piece (*a*), when the knob (B) of the lever rests upon the metal cushion (B), which is in connection with the bearings of the beam. The screw point, (*s*) is connected, through the terminal (2) with the zinc pole of a battery. Lastly, the lever (A) is in connection with the relay. When transmitting, the lever (A) is turned aside, by which the relay is put out of circuit, and the spring (*s'*) connects the battery with the back contact of the key. The zinc current then passes through (2, *s*, *s'*, *e*, K, B, 1) into the line. When the beam is depressed upon the front contact the current passes from the positive battery (3, *d*, K, B, 1) into the line; and when it is replaced both the circuits are interrupted, and the arriving currents go over (1, *b*, A, 4) to relay and earth.

RECORDING INSTRUMENTS.

Under this head we understand all the various modifications of the electro-magnetic recording instrument invented by Professor Morse. Its simplicity and facility of manipulation procured for it at an early date, and will probably long retain for it, an almost universal employment. There are quicker systems, but all of them obtain their speed at the cost of simplicity, and they are, therefore, only applicable in special cases.

Siemens and Halske, Berlin, exhibit an embossing Morse apparatus, completely mounted on a board, with galvanoscope, relay, transmitting key, and terminal screws.

The Morse apparatus consists of a strong clockwork, intended for drawing the paper with a uniform velocity over a roller with a groove in it. Underneath this roller is a metallic style, carried on one end of a beam, the other end of which supports a soft iron armature over the two poles of an electro-magnet. When the armature is attracted by the poles, the style is raised and pressed into the paper underneath the groove, leaving the marks embossed upon it. The relay is of the American construction, and is very delicately adjusted. These instruments are much used on the German railway lines.

Jean Leopolder, Vienna, shows an embossing instrument, in which the clockwork is very neatly boxed into a brass case, occupying the least space possible, and keeping the apparatus free from dust. The paper strip is led between rollers over the middle of the apparatus.

Digney Brothers, Paris, exhibit a Morse apparatus known as the direct-working ink-recorder. The purpose of this invention is to spare the use of the relay by making the Morse sufficiently delicate to give marks upon the paper with weak currents. The paper strip is lifted by the end of the writing-beam, which carries the armature, against a small metallic disc fixed upon the axis of one of the wheels of the train. This disc is kept inked continually by a little drum of felt, which rests upon it and turns with it. Direct-working ink-recorders are very extensively used in France. In those stations where much work is done, and the telegraphists are unable to read by ear, these ink-recorders are decidedly very practical, as they are easily kept in order with a little constant attention. But where there is little to do, the employés sometimes neglect to attend to the felt roller, which, in that case, is found to be continually too dry, and it does not mark the paper, or too moist, and the ink runs down and makes a blot.

Siemens and Halske, Berlin, exhibit also a construction of direct-working ink-writer, in which the writing arrangement differs from that of Digney in the writing fluid being contained in a horizontal bottle, the neck of which has a slit for the writing disc to turn in. The paper is conducted between guides and rollers over the disc which is lifted up to it by the beam when the armature is attracted. The disc is fixed upon one of the axes of the clockwork and turns in the reverse way to the direction of the paper strip.

The cores of the electro-magnet of this instrument are polarised by being fixed upon the north end of a permanent steel magnet whose south end carries the armature. By this, the delicacy of the system is considerably increased.

P. Vinay, Paris, exhibits a Morse ink-recorder, in which the inking arrangement differs from the constructions of both Digney and Siemens. The apparatus is provided with a disc (*d d*, fig. 4), rotating in a scraper, the lower part rubbing against a piece of inked felt contained in a shallow dish (*H H*). On the upper left hand sides of the disc rides a little jockey disc (*c*) which turns upon an axis in the frame (*E*). The frame turns upon an axis in the bearings (*K*). An arm (*E' F'*), attached to the frame, is provided with a pin held by a fork at the end of the writing beam. The paper strip is drawn between the rollers (*R* and *R'*) over the pulley (*b*), where it is struck by the disc (*c*) whenever the armature of the electro-magnet is attracted and the writing beam lifted, turning the frame (*E*) on its axis. By this arrangement, the disc which marks the paper is never overloaded with ink.

A. F. Cacheleux, Paris, exhibits a Morse apparatus with some historical modifications. Instead of the oil colour used in the writing systems of Digney and Siemens, Mr. Cacheleux employs a reservoir of liquid Indian ink, in which a kind of drawing-pen dips. This arrangement is shown in fig. 5. The drawing-pen (*f f*), turning upon the centre of the head (*c c*), consists of two thin metallic plates, whose distance from each other is regulated by the adjusting-screw (*g*). On the left-hand side of the centre is a pin, fixed in the flat head (*c c*) of the lever, and held by the fork end (E) of the writing-lever (*i i*). In front of this part of the instrument is an inkstand, consisting of a cylindrical reservoir, in which, by means of a screw on the top, a loosely-fitting piston of porcelain may be raised or lowered to alter the niveau of the ink. The lower part of this reservoir communicates with the trough (*j j*) in which, when at rest, the drawing-pen (*f f*) dips. The paper strip passes between the rollers (R and R'), over the pulley (*a*), and is struck by the drawing-pen whenever the armature of the electro-magnet is attracted, and lifts the end of the writing-beam, turning the pen upon its axis. Another addition, equally applicable to all Morse apparatus worked with a relay and local battery, consists in placing an alarm-bell over the electro-magnet. The hammer is placed upon the top of a bell-crank lever, and turns upon a vertical axis in such a way that it can be set in motion by the end of the beam which carries the keeper of the electro-magnet. It is put in gear by simply turning a switch forward, and put out of gear again by turning it backwards.

L. Bréguet, Paris, shows a Morse apparatus, in which the inking arrangement combines, in his opinion, the best points of both Siemens's and Digney's systems. The writing lever is supported upon a bearing beyond the electro-magnet, so that when the keeper is attracted the writing-beam is depressed instead of being elevated, as in the usual form. The paper runs over a fixed knife edge, and is struck by a disc, moved by the end of the writing-beam, and upon the upper side of which a Digney's felt roller leans. The disc is attached to the axis of one of the wheels of the clockwork, and rotates with it. The counter-spring of the writing-beam has to lift both disc and felt roller, so that the electro-magnet must perform an amount of work which will probably prevent the application of this arrangement to direct recorders.

M. Bréguet has also a Morse ink-writer, in which the parts are arranged more compactly than is usual. This apparatus is shown in fig. 6. The clockwork differs little from that of the ordinary Morse recorder. The paper strip, which is drawn by the roller (N), passes over the guide (G) underneath the drum (R), whose surface is roughened, then over the thin steel cylinder (*i*). The electro-magnet (E) is horizontal, and the writing-beam (*l l*), which carries on its lower extremity the armature (A), and on its upper an arm on which the writing-disc (*m*) turns, is vertical. The disc receives a rotating motion, in the reverse direction to that of the paper strip, by means of a pinion on its axis, which gears into a tooth-wheel on the axis of the drum (R).

* Messrs. Johnson are not in class 64; but the writer has mentioned them, as their exhibition directly refers and is important to telegraphy.

M. Hipp, Neuchatel, shows his ink-writing Morse apparatus, in which the electro-magnet is placed within the metal and glass box containing the clockwork. The purpose of this arrangement is to protect the apparatus from dust. The writing-beam moves at right angles to the direction of the clockwork. One end protrudes through the front of the apparatus and carries the writing-disc. The writing arrangement is like that of Digney's direct working Morse; the general construction is ingenious. The adjustment of his writing-beam is a point very carefully attended to by Mr. Hipp. The beam, when at rest, is balanced between two spiral springs, one on each side. The purpose of this is that, when the electro-magnet becomes active and commences attracting the keeper towards it, the spring offers no resistance, but that its tension becomes greater and greater the nearer the keeper gets to the poles. When the current is interrupted, therefore, the spring has its full force to draw the keeper away, but none to oppose the commencement of its return to the poles. The idea is decidedly a good one, and capable of extension; but the writer is of opinion that it might be done with one spring as well as with two. The force of the spring augments in direct proportion to its elongation, the force of the magnet indirectly to the square of the distance, nearly. Between these two relations a very fine adjustment may, no doubt, be made. There is, nevertheless, a disadvantage in arranging a Morse in this way, arising from the want of sound, when the beam falls back, preventing the telegraphist reading by ear.

Longoni and Dell' Acqua, Milan, exhibits a Morse apparatus on Maroni's principle, with an electro-magnetic keeper. The apparatus is, otherwise, constructed in the usual way. The main electro-magnet consists of two vertical bobbins of wire, with soft iron cores joined by a neutral block underneath. The keeper consists of a simple bobbin of wire, encircling a cylinder of soft iron, whose ends have parallel soft-iron continuations, which are held just over the poles of the main electo-magnet. The bobbin and core of the keeper turn on their axis and move the writing-beam. The wire of the three bobbins is connected up in a single circuit, so as to magnetise the ends of the keeper oppositely to those of the electro-magnet. A greater sensibility of action is proposed to be gained by this system, the keeper being attracted to the poles with considerably more force than if it were not encircled by the wire; and, as both are magnetised at the same instant, this armature should respond more quickly to the currents than an ordinary one.

Messrs. Digney Brothers show a similar Morse apparatus.

T. Sortais, Lisieux, shows his self starting and stopping Morse, with some modifications in the general appointments of the apparatus. With the usual Morse-receiver, when the telegraphist hears the signal for commencing a correspondence, he releases the clockwork and lets the paper run. In case of absence or inattention the message cannot be received. To remedy this evil various inventors, and amongst them Mr. Sortais, have proposed arrangements for making the Morse clockwork self-releasing, so that the paper of the receiving station is started by the telegraphist who transmits. The releaser is made as follows:—The last horizontal axis of the clockwork carries a wheel (M) fig. 7., which gears into an endless screw (*p*) upon a vertical axis. A thin spiral steel spring (P) is fixed, at its upper end, to this shaft, and, at its lower, to a horizontal arm (*a*) which turns upon the shaft. A single projecting tooth (*m*) on the axis of the wheel (M) turns a ratchet-wheel (G) upon an axis fixed in the side of the apparatus. This wheel carries, on one side, a bent wire (*h*, *i*), and, on the other, a counterpoise (*i'*) of ten grammes, at the extremity of an arm (*h'*) which tends always to turn the ratchet and lift the bent wire away from the arm (*a*), against which it rests. This is, however, prevented by a click (E), held down upon the wheel by a weak spring. On the click (E) is a pin (*d'*), which goes through a hole in the side of the apparatus, and is so placed that the writing-lever, when deflected half way between its highest and lowest points, will strike against it. In repose the arm (*a*) rests against the end (*i*), and the force with which the wheelwork tends to turn the endless-screw shaft is balanced by the tension of the spiral spring (P). When a current is received the writing-lever is deflected, strikes the pin (*d'*), raises the click, and lets the ratchet-wheel turn round with its counterpoise, releasing the catch (*a*) from the wire (*i*). As long as currents are being sent, the click is continually being struck out of gear. When the reception ceases, the click keeps every tooth of the ratchet which is pushed forward by the tooth until the wire again blocks the way, and prevents the rotation of the catch. The use of the spring (P) is to allow the tooth (*m*) to get clear of the ratchet-wheel, so as not to prevent its release.

The Spanish Telegraph Direction, Madrid, exhibits a double style Morse writer, the invention of Mr. E. Bonet, employé of the direction. The transmitter consists of a commutator for sending reversed currents. The receiver consists of an ordinary clockwork. The electro-magnet is horizontal, its armature being formed by a small permanent horseshoe magnet, the horns of which play between its poles. This magnet-armature lifts two inking-discs, the lower segments of which are moistened in a dish of printing-fluid against a common paper strip. At the bend of the horseshoe magnet is attached a wire carrying a small hammer which plays between two bells of different sizes when the receiver is used as an acoustic instrument. The direction asserts that the speed with which this instrument is worked on their lines is at the rate of thirty-four words per minute.

M. Gloesner, Liège, exhibits an ink-recording instrument, in which, for greater sensibility, he employs a multiplier of wire and magnet-needle, instead of the electro-magnet of Morse's recorder. The axis of the magnet-needle carries two arms, at right angles to each other, on the extremities of which are small inking-discs. The paper strip is drawn longways over the edge of a rectangular prism, and presents a separate surface to each of the inking-discs. The idea does not seem to be a very happy one.

RELAYS.

I. Leopolder, Vienna, shows a relay consisting of a vertical electro-magnet with the usual arrangement of keeper, beam, and contacts. A novelty in the apparatus consists in the terminals of the line and earth wires, each being divided into three parts, with two holes for screw-plugs. The two ends of the electro-magnet coils are connected on each side with the first and last pieces, and the line and earth with the middle ones. By altering the places of the plugs, therefore, the coils of the relay may be from time to time inverted to prevent any lasting effects from residuary magnetism in the soft iron. One of the two terminals of the local battery is also divided and supplied with a hole for a contact-plug, by removing which the operator can break the circuit of his local battery at pleasure.

Siemens Brothers, London, exhibit a relay and galvanoscope combined. The relay is on the polarised principle, with two vertical bobbins on iron cores fixed upon the north end of a permanent magnet. On the top of the glass cover of the relay, under a small glass dome, is a single magnet-needle supported upon a point. When a current passes through the coils of the relay the polarisation of the electro-magnetic cores is altered and the needle deflected. The telegraphist who is receiving can therefore see when currents are arriving through the relay without employing a separate galvanometer, as has hitherto been done.

Digney Brothers, Paris, exhibit one of Siemens and Halske's polarised relays. In this relay the armature and the soft-iron cores of the electro-magnet are oppositely polarised by contact with a permanent magnet. The steel magnet (*N S*), fig. 8, is bent into an angular form, which allows the neutral block (*b b'*), from which the soft-iron cores of the electro (*m m'*) branch, to be fixed upon the north end, whilst the south end (*S S'*) is provided with a slit (*B*) in which the pivot of the soft-iron-tongue (*c*) rests. The permanent steel magnet (*N S*) communicates permanent north magnetism to both the poles (*n* and *n'*) of the electro, and permanent south magnetism to the armature, which plays between them. When the armature is equidistant from the poles it is equally attracted by both of them, but takes up a position on either side *n* or *n'*), according as this distance is diminished by a force in one direction or the other. The electrical contacts for the local circuit are made by means of screw points, one on each side of the continuation (*C*) of the armature, the latter being supplied with facings of platinum. The soft-iron blocks (*n n'*) on the ends of the cores of *m* and *m'* are provided with slots, and secured by screws, by which their distances from the armature may be adjusted. When an instantaneous current passes through the coils the magnetism of the cores and ends is altered, one of them being strengthened and the other weakened, or reversed. The magnetism of the armature, however, remains unaltered, and it moves, therefore, towards and stops on that side where the magnetism is strengthened. Thus the armature of this relay remains always on that side which is determined by the last current sent through it, and does not move from its contact when the current in the line ceases. It is, therefore, possible, with the help of this instrument, to work a Morse telegraph with the instantaneous currents of an induction apparatus, which was the original purpose for which these celebrated electricians constructed it.

AUTOMATIC TELEGRAPHS.

Siemens and Halske, Berlin, exhibit an automatic Morse telegraph, in which the signals are given by a contact lever, moved by an arm under which metallic types are drawn. This telegraph is a modification of the magneto-electric automatic telegraph shown by the same manufacturers in 1862. The use of magneto-electric currents was found to be attended with certain disadvantages which the galvanic current is free from. The types are arranged in a sort of composing-rule. They are of three kinds—dots, dashes, and spaces. Arrangements are also shown for composing and decomposing the despatches. The composing apparatus is supplied with a keyboard. When a key is pressed down a corresponding type falls into a guide, from which it is struck into the rule, each time a letter is completely set. The distributing apparatus is supplied with three holes of different form, agreeing with the forms of the three sorts of types. A rod is forced along the rule, which pushes the types, step by step, before the three holes, behind which corresponding hammers strike them laterally. The first hole is small, and allows all the narrow or dot types to enter; the second hole is twice as broad, but has a projection at the bottom, over which only the space-types can pass; the third hole is complete, and suits the dash-types. A polarised direct-working Morse apparatus is used for receiving the reversed currents sent by this apparatus. The positive currents lift the writing-beam and produce dots and dashes; the negative depress the beam and produce spaces.

Digney Brothers, Paris, exhibit also an automatic transmitting apparatus, intended, like the last, to dispense with the employment of the key. The message is punched out of a strip of paper, which is then passed, with a uniform velocity, between a rotating cylinder and two levers, attached to which are two light metal springs, whose oscillations between fixed screw-points effect the necessary contacts and determine the signals transmitted into the line. The holes are punched out in two rows—one for dots and the other for dashes. The punching is done by means of a key with three levers. The first lever punches out long rectangular holes for the dashes, the second lever only pushes the paper forward, and the third punches out square holes for dots. The paper is drawn forward whenever either of the levers is raised up, after being pressed down; this is done by two brass rollers, with roughened surfaces, on the axis of one of which is a ratchet caught by clicks attached to the levers at different distances from their centres of motion. When the middle lever is pressed down its click snaps over one tooth and draws the wheel round so far, when it rises again. When the dot-lever is depressed its click snaps over two teeth, and, going back, draws the paper forward twice as far. The dash-lever draws it, in the same way, three times as far.

The transmission of the message is effected by means of a clockwork, not differing greatly from that of the usual Morse receivers. The prepared paper strip is drawn between two brass rollers. Before reaching them, however, it passes between a barrel, or anvil, and two light levers which set the contact-springs in motion; the latter being in the circuit of line and battery. As the paper passes through, one or the other of these levers falls through the holes and makes contact, the length of the contact being determined by the length of the hole.

By this system a speed of thirty-five words or 175 letters per minute is attainable—about double the speed with which an average telegraphist can work.

LETTER-SHOWING INSTRUMENTS.

L. Bréguet, Paris, shows his step-by-step telegraph, as used on the French railways. This apparatus consists of a transmitter for making and breaking circuit of a battery with the line and of a receiver with a clockwork. The transmitting contact is worked by a lever, the end of which carries a roller in a sinuous groove underneath a circular plate, turned on the axis of a handle which is moved over a dial-plate. Each current, as well as each interruption, indicates a letter. The receiver consists of a clockwork, whose escapement is released by the backward and forward motions of the armature of an electro-magnet in the line circuit. When the needle skips it is brought back to zero by pressing a button which puts the pallets out of gear and allows the scape-wheel to run round until a pin, which it carries, catches against a proper stop. This apparatus has been in use in France for years, and, from its simplicity and cheapness is likely to keep its place as a railway instrument, especially where a record of the despatch is not required to be kept.

M. Bréguet also shows a very compact arrangement of the transmitter, receiver, and alarm of this system in a small mahogany box, the joint invention of himself and Mr. Louis J. Crossley, of Halifax. The box is divided into three sections: the top section, forming the lid, contains the alarm; the second section, the receiver; and the lowest section, or bottom, the transmitter. When the box is closed the alarm is in circuit, but in being opened between the bottom and middle sections, to transmit or receive, the alarm is put out of circuit.

The Secretary of War, London, exhibits specimens of Professor Wheatstone's magneto-electric dial apparatus. This is the lightest and neatest of all the step-by-step telegraphs. The transmitter consists of two bobbins coiled upon an armature and rotated continually over the two poles of a battery of permanent horseshoe magnets. With the bobbins turns correspondingly a wheel with inclined teeth. When a letter is to be telegraphed a certain number of currents is sent into the line which moves the indicator exactly as far as is required. This is done as follows:—The tooth-wheel is fixed upon a hollow axis, and above it, on a central axis, an arm with a spring, which falls into the teeth of the wheel, a contact disc, and the pointer which denotes upon the dial the last letters telegraphed. The letters are telegraphed by pressing down buttons on the circumference of the transmitter. Each of these buttons depresses a lever inside, against which the rotating arm catches and is arrested, the spring being lifted out of the teeth of the rotating wheel. During the time, however, that the contact disc is rotating, it makes and breaks contact continually in such a way that, at those points where the arm could meet a lever, the line circuit is interrupted. Therefore, when the arm does meet a lever, which prevents the contact disc rotating any further, the line remains interrupted. When another letter is to be telegraphed its corresponding button and lever are depressed. By this the lever of the first button is pushed back and the spring on the arm allowed to fall into the teeth of the rotating wheel, by which the arm and contact disc are carried round until the former comes into contact with the last lever. In this way just so many currents of equal strength are sent into the line as there are letters between the two buttons. The levers are all arranged in a circle, vertically, and press a pitch-chain into a series of indentations on the periphery of a metal disc. The chain has slack enough to allow one lever to press it in; but, as soon as a second is depressed, not having slack enough for both, the first lever is pushed out again and the arm released.

The receiver of this apparatus has two electro-magnetic bobbins, between which two little bent magnets oscillate and move a small ratchet-wheel between two fixed clicks, by which the wheel acquires a rotatory motion. A pointer is fixed upon the same axis, and indicates upon a dial-card.

Siemens Brothers, London, exhibit their magneto-electric dial-telegraph, as used by the London Fire Brigade. The transmitter consists of a battery of permanent magnets, between whose poles a barrel armature coiled longways with wire is turned half round for each letter which is to be indicated. The receiver consists of a polarised electro-magnet, constructed similarly to the polarised relay of the same manufacturers. The end of the armature forms a fork, the two ends of which are provided with spring pallets, catching the teeth of a small ratchet-wheel, and pulling it a step round whenever the armature is deflected from one pole to the other.

A most useful variety of this apparatus for military purposes is shown by Messrs. Siemens Brothers, in which the transmitter and receiver are contained in a knapsack which a soldier may conveniently carry on his back. The knapsack has a pocket on each side. In one the transmitting-handle is contained, and in the other three wooden legs, intended for supporting the apparatus when at work.

The peculiar form given to the armature enables the full force of all the permanent magnets employed to be in action at once in generating the current. It is on this account that the transmitter of this apparatus is able to work through a considerably greater resistance than the majority of magneto-electric telegraphs.

Guillot and Gatget, Paris, exhibit a magneto-electric dial-telegraph, the transmitter of which consists of four bobbins with soft-iron cores fixed in the corners of a square upon the two poles of a permanent steel magnet, as in one of Professor Wheatstone's telegraphs. A soft-iron keeper, upon an axis which passes in the middle between the four bobbins, rotates over their poles and alternately closes the magnetic circuits of the opposite ones. The axis of the keeper carries a pinion which engages with a tooth-wheel on the arbour of the transmitting handle. The latter turns over an ordinary French dial-plate. The wire of the bobbins forms a single circuit, one end of which is to earth and the other connected with a metal spring which, when the handle is raised to turn it round, makes contact with a ring on the central arbour in permanent connection with the line. When the handle sinks into one of the notches of the dial-plate this ring is depressed, breaking the circuit of the bobbins and making contact with the receiver. The soft-iron keeper is nearly broad enough to close the circuit of two poles, at the same instant that it leaves the circuit of the two neighbouring ones. The purpose of this is, that the currents induced by the armature leaving and approaching may be combined to form a single current. On lines with little resistance this transmitter may work well, but, whilst neither the bobbins nor the magnets are moved, it cannot be expected to give intense currents.

The receiver used with this instrument is almost identical with that of Bréguet's step-by-step railway telegraph; only, to accommodate the reversed currents, the keeper is formed by a permanent magnet which plays between the poles of two electros, one on each side of it.

The Imperial Telegraph Commission, Vienna, amongst other apparatus for military purposes, shows an electro-magnetic dial instrument, constructed by Mr. Marcus, of Vienna. The transmitter is formed by a Stöhrer's induction apparatus, in which two bobbins, upon the ends of a soft-iron armature, are rotated over the poles of a permanent magnet. The receiver consists of an electro-magnet between the poles of which a small permanent magnet oscillates and turns, by means of two pallets fixed upon it, a ratchet-wheel on the axis of the pointer.

The dial-plate of the transmitter is not supplied with holes, or notches, in which the handle can be arrested. In consequence of this want, it is almost impossible, when transmitting with a uniform velocity, as is necessary in using magneto-electric apparatus, to arrest the handle exactly at any letter. This is evidently not an oversight, but is done purposely, on account of the weight and form of the rotating bobbins, which, when in motion, acquire a considerable force. Were they to be suddenly arrested by the handle catching against a notch, this force would be converted to the destruction of some part of the apparatus. With this slight drawback, this magneto-electric telegraph has considerable merits, its power being superior to many of the others exhibited.

TYPE-PRINTING INSTRUMENTS.

A. Joly, Paris, exhibits a Roman type printing telegraph, worked by interruptions of a galvanic current. The transmitter consists of a Bréguet's dial-plate, with a simple commutator for reversing the poles of the battery at any moment it is required to do so. The receiver is supplied with two clockworks for turning the type-wheel and for working the printing-press. The type-wheel is turned by an escapement released by means of an electro-magnet, whose coils are in the line-circuit, whenever the armature is attracted to or let go from the poles. The same axis carries also a wheel with spike teeth, which strike against the end of a thin steel spring, and make and break a contact in the circuit of a local battery and the electro-magnet whose armature releases the printing-press. The length of the steel spring is made so that its velocity of vibration is less than the velocity with which the spokes of the wheel strike against it. It is thus prevented returning to its position of rest during the time the type-wheel is being turned round. When the latter, however, stops, the spring resumes its normal position and closes the circuit of the local battery. On the type-wheel are two rows of types—one with letters of the alphabet, the other with numerals, signs of punctuation, &c. The paper strip underneath the type-wheel passes in a guide-fork over a cushion of indiarubber, which causes it to be slightly elevated in the middle, just where it strikes the types. The position of this cushion underneath one or other of the rows of types is determined by the keeper of an electro-magnet, whose coils are in a second circuit of the local battery, and of a contact-tongue formed by a permanent magnet suspended between the poles of the electro-magnet used to release the escapement of the type-wheel. The position of this tongue depends, therefore, upon the nature of the currents which are sent from the transmitting-station. If positive currents, it lies upon that side which leaves the second local circuit open, and the cushion underneath the row of letters. When the telegraphist wishes to print numerals, &c., he simply reverses his battery during the time this is to last. In doing so he throws the permanent-magnet tongue at the receiving-station over to the other side, closing the second local circuit and drawing the cushion under the second row of types. This will be better understood by reference to fig. 9. The axis of the type-wheel carries—1, the disc with double row of types; 2, the wheel of radial spikes for striking the contact-spring (*s*) from the contact-point (*o*); 3, the scape-wheel (*e*), caught by the pallet (*h*); 4, the pinion (*w*), gearing into the next wheel of the train; 5, the pointer (*p*), indicating upon a dial-plate the position of the type-wheel.

A series of positive currents arriving from the line passes through the coils of the electro-magnet (E), causing the armature (*a*) to oscillate and allow the escapement to turn round step by step. In turning, the spokes of *i* strike against the spring (*s*), which moves too slowly to return to the contact (*o*) until the revolution of the wheel ceases. As soon as this is the case, the first local circuit is closed, and the current of the battery (B) passes through E ², *s*, and *o*, releasing the printing-press. If a series of negative currents arrives, the armature (*a*) is moved as before; but the first current also causes the magnet armature (*a'*) to go to the other side and close the contact (*c*), by which the second local circuit (B, E', *c'*) is completed, and the armature of E' attracted, draws the cushion of the printing-press underneath the second row of types.

The method adopted by Mr. Joly for drawing the paper-strip along after each letter is that of a Geneva stop without the convex tooth. The printing-press is lifted by a lever attached to a connecting-rod, whose upper end is coupled to a crank, which makes a revolution each time a letter is to be printed. A stop-finger on the axis of this crank turns the stop-wheel on the axis of the roller, which pulls the paper forward,

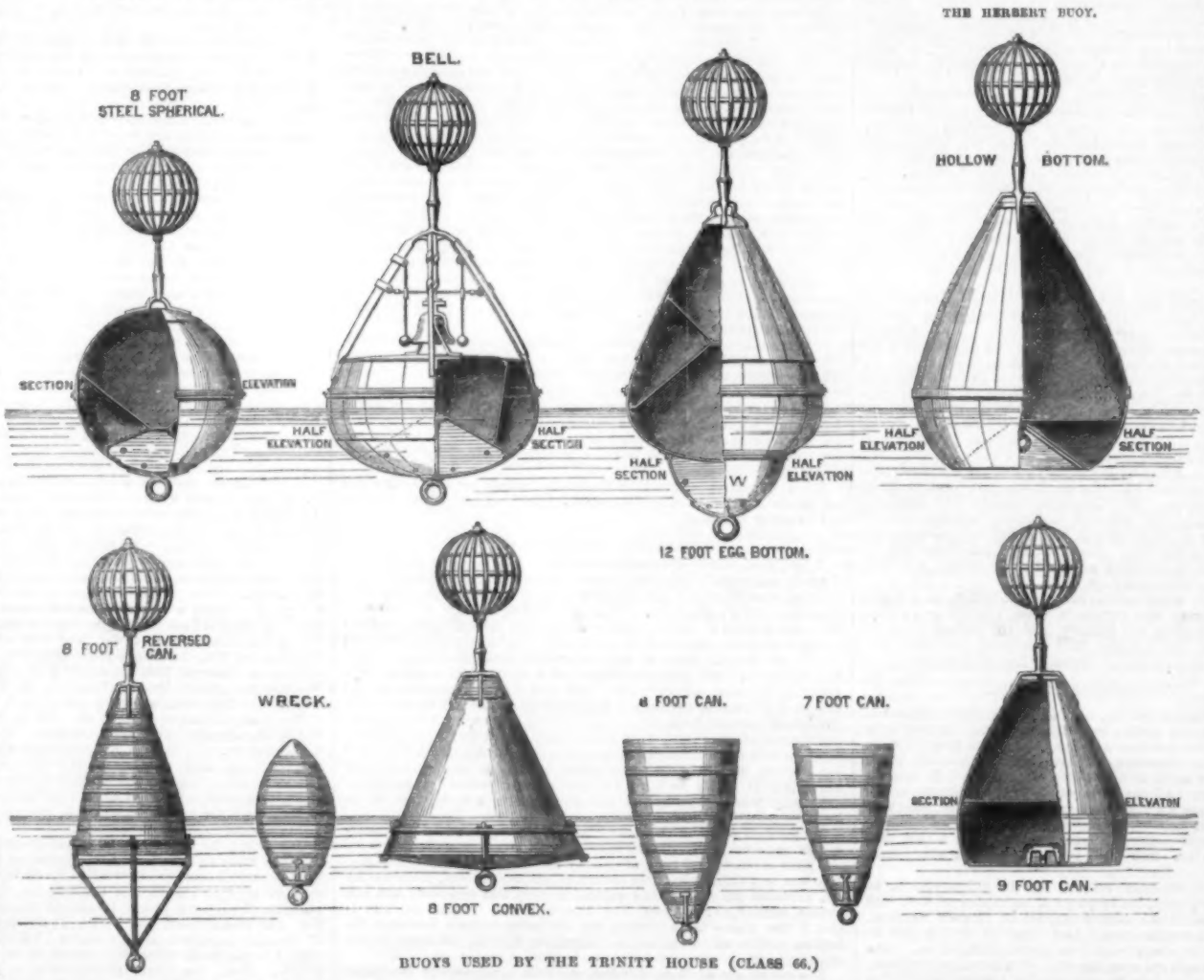
The Spanish Telegraph Direction, Madrid, exhibit a type-printing telegraph on the system of Mr. Ramon Morènes, of Madrid, sub-inspector of telegraphs. The transmitter used with this instrument is identical with that of Bréguet's French railway telegraph, in which a metal disc underneath the dial-plate is provided with a sinuous groove, in which a small roller, carried by a lever, runs and communicates an oscillating motion to a spring, and thus making and breaking the circuit of a single battery. The receiver resembles that of Mr. Joly, just described. It is provided with two separate clock-works, one for turning the type-wheel, the other for lifting the printing-press. The mechanism for turning the type-wheel contains nothing novel. The latter is carried, outside the case of the clockwork, on an axis having a tooth-wheel, which gears into a pinion of one fourth its diameter, upon the axis of the scape-wheel. A double pallet, oscillating between the teeth of the latter, is fixed upon an axis at right angles to that of the type-wheel, and is regulated in

THE LATE PARIS INTERNATIONAL EXHIBITION.

its movements by the armature of an electro-magnet in the line circuit. The printing-press is set in motion by a local battery in a circuit including a releasing electro-magnet and a vibrating contact. The latter, which is ingenious, is shown in fig. 10. On an ivory arm, at right angles to the beam (A), are two thin springs (*a* and *b*), whose heads (*a'* and *b'*) press lightly against the tops of the two arms, *c* and *c'*, one of the latter pressing always against *d* or *d'*—screw points in a common metal piece (*e*). The local circuit is made by way of *b*, *c'*, and *d'*, or by *a*, *c*, and *d*, according as the armature is attracted to the poles or not. Whilst transmitting, the armature vibrates continually; and the *vis viva* of the screw-heads (*a'*, *b'*) is sufficient to carry either of them off the upper contacts at the same moment that *c* or *c'* meets the lower contact. In this way, until the armature rests on either side sufficiently long to enable the screws to fall back upon the contacts, the local circuit is interrupted and the printing-press cannot act. An arrangement is provided for lifting the pallets out of gear of the scape-wheel, in order to bring the type-wheel back to zero in case it should "skip."

Guyot d'Arlincourt, Paris, exhibits a step-by-step printing-telegraph, based upon a principle slightly differing from the foregoing. The type-wheel is turned round by a clockwork, regulated by an escapement in connection with the armature of an electro-magnet, whose coils are in the line circuit. The armature of the electro-magnet operates also as relay in the circuit of a local battery, and an electro-magnet, which releases the printing-press. When a quick succession of currents arrives, the armature of the printing electro-magnet, which is sluggish, is not attracted; but, as soon as the current becomes continuous, the printing-press is released. The press is lifted by an eccentric of triangular form. The paper strip is drawn forward between two rollers by means of a ratchet-wheel on the axis of one of them, which is caught by a click moved by the armature of the printing-magnet.

Levin and Co., Berlin, exhibit a type-printing telegraph, without clockwork, worked by reversed currents. The currents put in motion the armature of a polarised electro-magnet, which oscillates a small ratchet on the axis of the type-wheel and pointer, between two spring pallets, the same as in Professor Wheatstone's receiver. The type-wheel differs from the others exhibited in being formed, not of a rigid disc, but of thin steel springs radiating from a centre, each of which carries a type, as in Siemens and Halske's original dial-telegraph. When the armature of the printing electro-magnet is moved, it depresses only one of the springs upon the paper strip; and, as they are very light, the work which has to be done is very little. A second line wire is necessary for working the printing-press. The transmitting-handle, which turns over a dial-plate, is provided with a button, which is pressed down when it is wished to print a letter. The workmanship of this apparatus is excellent, but the whole arrangement displays a want of electrical experience.



BUOYS USED BY THE TRINITY HOUSE (CLASS 66.)

Digney Brothers, Paris, show a printing-telegraph invented by Mr. Desgoffi. This instrument belongs to another type of French printing-telegraphs. It consists of synchronously rotating type-wheels, the printing-press being set in motion by a current sent from the transmitting station at the instant when any type which it is desired to print is underneath. The synchronism is obtained by an ingenious arrangement for sending a periodical current. On the axis of the type-wheel is an arm rotating with it and making contact against a stop, which is released when a current passes through the coils of an electro-magnet, but prevents the further rotation when no current passes. The rotating arms, stops, and electro-magnets of both apparatus are in the same circuit; so that the two type-wheels can only be released and commence a rotation at the moment when both arms are, at the same time, in contact with the stops. Should one arrive sooner than the other, it is held fast until the arm at the other station makes contact. Then both are released by the same current and start together. The contacts for printing various letters are elevated upon a disc of metal which revolves with the type-wheel. They are arranged correspondingly with the rotation of the types, but at different distances from the centre, and in different sections of the circle. The transmitting contact is made with a spring moved in a line across the centre of the disc by a handle which points to an engraved alphabet, half of which is on each side of the vertical line passing through the centre of the contact disc. As the disc rotates, one of its elevated contacts meets the spring point and closes the circuit of the battery, sending the current through the relays, which are not moved by the synchronous currents, and, with the aid of local batteries, lifting the printing-press. The type-wheel is stopped during the printing, but the clockwork, contact arm, and disc continue to rotate. This is done by attaching the type-wheel to the axis, not rigidly, but by means of a spiral spring under tension. During the short interval required for printing a letter this spring is simply wound up a little way, and, when the printing current ceases, the type-wheel flies round to its stop upon the axis ready to commence another synchronous revolution. This movement is new, and has the advantage that no time is lost during the printing.

Dumoulin-Froment, Paris, exhibit Hughes's Roman type printing instrument,* in which the letters are printed whilst the type-wheel is in full motion, and without slackening its speed; whereas, in all the other methods the type-wheels are arrested during the printing. Therefore Hughes's telegraph is capable of printing more letters per minute than any other. This telegraph consists of a clockwork at each of the stations. These clockworks are driven by the descent of equal weights and made to go nearly synchronously by similar regulators, either vibrating springs or conical pendulums. In this way the two type-wheels revolve about 120 times per minute, for all practical purposes, correspondingly—that is to say, at any given moment the same letter will be in the same position on both the type-wheels. The printing-press is set in motion by a cam turned upon an axis whenever a current passes through the releasing electro-magnet. Each apparatus is supplied with an arrangement by which the operator can send a current through the electro-magnet of both stations at the instant any desired letter on the type-wheels is underneath.

This telegraph is complicated, and requires the continued presence of a good mechanician to keep it in order; but, by way of compensation for this drawback, it is not only the most beautifully arranged but the quickest in its operations and the most economical in its use of the electric current of any apparatus yet introduced.

COPYING TELEGRAPHS.

E. Lenoir, Paris, exhibits a new mechanical copying-telegraph. There are two cylinders—one at the sending and one at the receiving station—which rotate synchronously On the transmitting cylinder is a design or writing done in insulating ink upon a surface of silver paper, through which the current passes. At the receiving station the cylinder is covered with a thin coat of printer's ink, and has a sheet of tracing-paper stretched over it. A style, carried by the armature of an electro-magnet, falls upon the tracing cylinder whenever the current in the line is interrupted, and presses it hard enough to leave a trace of printer's in on the underside of the paper.

The apparatus consists of a clockwork driven by a weight, which gives rotation to the cylinder, to a horizontal screw for moving the style along it, and to a vertical axis surmounted by a flywheel and conical pendulum used for regulating the speed. There are two batteries which supply current for the line, one at each station. The current of the battery at the receiving station is added to that of the sending station periodically, so as to give a series of vibrations to the tongue of a relay at the latter station, which closes the circuit of a local battery and two coils of an electro-magnet, over the poles of which revolve the spokes of a star-shaped armature upon the vertical axis. The addition of the second line battery for this purpose is done by a commutator on the vertical axis of the receiving apparatus.

Fig. 11 gives a theoretical plan of Mr. Lenoir's arrangement. The transmitting cylinder (D) turns underneath the contact style (*s*), which always presses upon it. The current of battery B' goes through the relay (R') line, coils of the copying electro-magnet (M), and through C (the commutator), either directly to earth through K', or adds itself to the current of B [1] by way of K. The two contacts (K and K') are placed so that only one is in action at a time, the other being insulated. In either case, the current is strong enough to keep up the armature of M, and prevent *s* falling upon the tracing-paper stretched over D'. When, however, an insulated line passes under the point of the style (*s*), the whole circuit is interrupted, and the armature of M, falling off the poles, lets *s* make a line upon the paper. The rotation of C gives a series of augmented currents, which set continually the tongue of R in vibration, and close the circuit of B and coils of G correspondingly. The radiating armature of G is turned by a similar train of wheels as that which turns C, and therefore a spoke of the armature comes always over the poles at the same instant that the current of B' is augmented by that of B [1]. And the momentary attraction is sufficient to accelerate or retard the wheelwork which drives the armature of G to accommodate the speed of C.

To prevent residuary magnetism in the cores of M, M. Lenoir coils his wire on the two bobbins, so as to give similar poles. He lessens the spark, due to extra current, between the two sides of the contact of R by inclosing a condenser of platinum plates in water between the tongue and the contact-screw. If copying-telegraphs were necessary or useful things, this one, which is certainly the simplest yet constructed, would have the best chance of employment.

L'Abbé Caselli, Paris, exhibits his copying-telegraph. This consists of a heavy pendulum at each of the stations, made to swing synchronously by means of regulating electro-magnets. These pendulums move contact-styles, which travel backwards and forwards over cylindrical surfaces. On one of these surfaces is the design, drawn in insulating-ink upon metallic paper; in the receiving instrument a piece of paper chemically prepared, the salt of which is decomposed by the current which passes through the styles and through the metallic paper. The details are beautiful, but the apparatus is very heavy, and the system, at present, of little practical importance in electro-telegraphy.

SPECIAL ARRANGEMENTS.

Siemens and Halske, Berlin, exhibit an apparatus constructed for indicating the height of water in a reservoir by means of magneto-electric currents. A pitch chain, fixed at one end to a float on the surface of the water, passes over a cog-wheel and carries at the other end a counterweight. When the water, therefore, rises, the float, rising with it, lets the counterweight down and turns the cog-wheel in one direction. When the water falls, of course, the cog-wheel is turned in the reverse direction. On the axis of the cog-wheel is fixed one end of a helical spring, which is wound up or unwound when the wheel turns. The other end of the spring is fixed to a soft-iron barrel armature, the wire of which is wound longways. When the cog-wheel has made a complete revolution, and either wound up or unwound the spring, the barrel armature is released, and the spring in regaining its normal position twists round the barrel between the poles of a battery of permanent magnets. In turning, the sides of the soft-iron barrel take alternately different states of magnetism, and therefore induce different currents in the wire upon it. The direction of these currents depends upon the direction of rotation, two currents being given for each revolution, one way positive-negative, the other negative-positive. This is essential for the indicating instrument, which is moved only by the last current each time. The currents which follow the rising and falling of the water are sent through different lines. This is attained by a mechanical arrangement, one end of the wire upon the barrel being attached to an insulated ring, on which is a clip with a short arm pressed against one or other of two fixed contact-points, according to the direction in which the barrel is turned. These two contact-points are in circuit with the two lines. Thus all the currents induced whilst the water is rising are sent through one of the lines; those induced during the time the water falls, through the other. At the receiving station, where the indication is required, the two lines are connected with the coils of two polarised electro-magnets, whose armatures end in spring pallets which catch into the teeth of two ratchet-wheels. Each of these wheels is fixed upon a hollow axis, which carries also a crown-wheel. The teeth of the two crown-wheels are directed towards each other, and between them gears a pinion turning upon an axis, fixed at right angles upon the central axis of the system. Whenever, therefore, one of the electro-magnets is set in action its armature, attracted and repelled, pulls round, step by step, one of the ratchet-wheels, and causes the pinion between the crown-wheels to turn half as many teeth in the same direction. The pallets of the armatures engage with the teeth of the ratchets on opposite sides, and therefore turn them in opposite directions. The central axis carries an index which denotes upon a circular dial the position of the float upon the surface of the water.

A. V. Bergmüller, Vienna, shows a system of police telegraphs, in which he proposes to use lamp-posts, &c., as branch stations. Two such branch stations are shown, one arranged for a lamp-post, the other for the corner of a building. The branch station consists of a box containing a clockwork and cylinder, with a series of contacts. When the clockwork is released, by pressing down one of a series of buttons, the cylinder revolves, and gives the necessary signals to the line. The top buttons are marked "fire, thieves," &c., and the lower ones indicate the street or quarter in which aid is required.

The dial plate and buttons are protected by a small iron door, to which the policeman on duty alone has the key. Inside each door is a paper of printed instructions for the guidance of the operator, and above the dial a small galvanometer, which indicates if any other station is signalling through the same line, in which case the operator has to wait until the magnet-needle becomes quiet.

The signals are to go to a central station, where they are received upon the paper strip of a self-starting Morse apparatus.

L. Bréguet, Paris, exhibits a system of automatic repeating signals, for use with his railway telegraph. This arrangement is intended for employment on lines having several stations in circuit. When the central station gives a signal, an alarm is sounded at the branch station.

This alarm is moved by clockwork released by the current, and gives exactly so many beats as represents the number of the station on the line. Each beat sends a current to the central station, where the receiver of the dial telegraph in circuit indicates the number of currents received.

The system is intended to prevent errors and to serve as a security that the right station is being corresponded with. Thus, if the central station "call" No. 5, and receives six beats in return, it is evident that the line is in circuit with a station beyond the required point.

LIGHTNING-DISCHARGERS.

T. Picco, Alexandria, shows a novel construction of lightning-guard, called automatic. When the atmospheric electricity enters

* The writer has given a detailed description of this apparatus in the "Electric Telegraph," p. 58.

the station, it fuses a short piece of thin iron wire, and by this releases a spring, which puts the line directly to earth. The end of the line is connected with a brass pillar, on the top of which a metallic beam turns horizontally. One end of the beam is pressed against a contact leading to earth by means of a helical spring round the pillar. When in use, the other end of the beam is secured by about an inch of thin iron wire to the terminal leading to the apparatus separating the beam from the earth contact, to which it, however, returns as soon as the wire is fused.

L. Bréguet shows a lightning-discharger, the suggestion of Messrs. Lartigue and Tesse, electricians of the Chemin de Fer du Nord, upon the same principle as that of Mr. Picco—namely, the automatic connection of line with earth as soon as the lightning enters the station. The difference between this and the foregoing systems consists only in the employment of gravitation instead of the tension of a spring. This apparatus consists of a metallic hammer connected with the line and held suspended by a thin iron wire, which is in the line-circuit. When this is fused by the lightning, the hammer falls down and makes contact with earth. This discharger is very small and neat, and is being introduced on the French railway lines.

Another form of lightning-discharger is shown by Mr. Bréguet, much used in France. It consists of a combination of the plate with the saw-teeth forms of discharger. The earth-plate is divided from that of the line by a thin sheet of writing-paper.

Siemens Brothers, London, and J. Leopolder, Vienna, show very handsome specimens of Siemens and Halske's plate lightning-discharger for four lines. This discharger is made of five plates of cast iron—the lower one, which is connected with earth, stands upon four feet upon the table; the other four are connected in the four line-circuits, and lie across the earth-plate. They are divided from it by four thin washers of insulating material, leaving a very narrow space of air between the lines and earth. These dischargers are the strongest and most reliable of any.

BATTERIES.

Leclanché, Paris, exhibits specimens of a new galvanic element. The positive pole is formed by a prism of carbon in the middle of a porous pot containing also a mixture of powdered peroxide of manganese and carbon. The negative pole is formed of a rod of amalgamated zinc, about half an inch in diameter, contained in sal-ammoniac and water. The peroxide of manganese being a tolerably good conductor of electricity, the system may be regarded as a single fluid element, in which the positive pole is formed of a material having a great affinity for the liberated hydrogen. The current is formed by the decomposition of the chloride of ammonium. The chlorine, or negative element, combines with the oxide of zinc, forming a salt which is soluble in water; and the hydrogen and ammonia, being both positive, go to the carbon pole, which is of course negative, underneath the surface of the fluid, and reduce the peroxide of manganese. Such an element appears to be subject to a considerable polarisation, but to last a long time without requiring attention.

J. Thomsen, Copenhagen, exhibits his polarisation battery. This apparatus is based upon the separate polarisations of a number of platinum plates, which are discharged in series. The battery consists of fifty small cells, divided from each other by platinum plates, and containing dilute sulphuric acid. If *a*, *b*, *c*, *d*, *e*, . . . are such plates, and we bring the carbon pole of a galvanic element to *a* and the zinc pole to *b*, the opposite surfaces of *a* and *b* will be polarised, hydrogen will be developed on *b* and oxygen on *a*. Therefore, on removing the battery, *b* remains the + pole and *a* the — pole of the gas element, *a b*. Instead of removing the galvanic battery, let us shift the connections from *a* and *b* to *b* and *e*, so that oxygen is now developed on *b* and hydrogen on *c*, then to *c* and *d*; and so on. At the end we shall have the electro-motive force of so many oxy-hydrogen elements. Mr. Thomsen employs fifty such plates, and makes the contact by means of a rotating commutator, which shifts the contacts of the battery on to the first two poles the instant after they leave the last two. The first and last plates are joined by a wire permanently with the terminals of the system, and between them a continuous current is kept up.

The writer made experiments in the Exhibition on the electro-motive force between the terminals when two Bunsen's elements were used for charging the battery, and the commutator rotated thirty-eight times (or charged 1900 elements) per minute. The electro-motive force was equal to seventy Daniell's elements.

MEASURING APPARATUS.

Siemens and Halske, Berlin, exhibit a complete testing board, with galvanometer for cable work. The board is arranged with two boxes of resistance-coils—one with duplicate 10, 100, and 1000 units, for the proportion resistances of Wheatstone's balance, the other with resistances from 1 to 10,000 mercury units. A commutator of novel construction allows these resistances and the circuits of the board to be arranged for measuring copper resistance; insulation by balance, deflection, and differential methods; charge, discharge, electro-motive force, and other necessary constants. The battery commutator is divided, to allow any number of elements from five to one hundred to be inserted at once.

The galvanometer is constructed upon the differential principle. An astatic needle is surrounded by a coil of thin copper wire, whose magnetic effect upon the needle is very great. A second coil, placed vertically upon a movable stage outside the case of the instrument, is adjusted so as to exert from 0·001 to 0·0001 times the magnetic effect of the large coil upon the needle. The cable whose insulation by differential method is to be measured is inserted, with a battery in the circuit of the larger, a known resistance and single element in that of the smaller coil, whose distance from the needle is varied until the latter rests over the zero line, at which moment, therefore, the magnetic effects of the two currents upon the needle are equal and opposite. Knowing the relation of the initial effects of the two coils at the same distance, the electro-motive forces, and resistance inserted in the smaller circuit, the resistance of the cable is easily calculated.

Siemens Brothers, London, show a differential galvanometer for measuring small resistances without the aid of resistance scales. The needle is balanced between the opposite magnetic effects of two separate coils of wire. These coils retain always the same distance from each other, but are moved together horizontally in a plane at right angles to that of the magnetic meridian. Therefore the magnet-needle may be midway between them, in which case they exert, with equal currents, equal and opposite magnetic effects upon it; or it may occupy any other point between them, in which case the needle is balanced by the stronger current circulating in the more distant coil. A common battery is used for both coils, a constant resistance being included in the circuit of one of them, and the unknown resistance in that of the other. The coils are then shifted until the needle rests over the zero line. This is done by means of a metal curve moved by a michrometer screw at right angles to the stage which carries the bobbins, and against which an agate point on the stage is pressed by the force of a spring underneath. The curve is graduated in terms of the mercury unit, so that the resistance of any wire may be read off directly without the intervention of resistance scales or the necessity of calculations.

Dr. H. Meidinger, Carlsruhe, exhibits a galvanometer, consisting of a tangent-needle, with a long vulcanite pointer which indicates upon a dial divided into degrees of force. The unit of these degrees is the weight of hydrogen gas developed by the current in an hour. The instrument is supplied with three terminal screws, which may be variously connected in circuit, giving various values to the unit of weight expressed by the scale, as follows:—

With screw No. 1 each degree represents		0·0001	grammes.
,,	1 and 2	,, 0·0010	,,
,,	1, 2, and 3	,, 0·0100	,,

the last being equivalent to 112 cubic centimetres of gas, at 0 deg. cent. temperature, and 760 mm. barometer.

By simple multiplication of the degrees of force indicated upon the circular dial-card with the equivalent weight of any metal, therefore, the absolute weight of metal reduced from its solution by the current in one hour is found.

LIGHTHOUSES AND COAST ILLUMINATORS.

Class 66.

BY CAPTAIN M. CLOSE (TRINITY HOUSE).

In the necessarily-contracted space to which a report on the lighthouse department of France and England, as shown in the Universal Exhibition of Paris, is restricted, many objects of interest may only be enumerated, and much interesting detail of those reported on will have to be omitted.

FRANCE.

The handsome iron lighthouse, erected on rockwork, nearly surrounded by water, on the left of the park entrance from the Pont d'Jena, is to be placed on a dangerous reef off the north coast of Brittany called the Roches Douvres, rocks situated about equidistant from the islands of Brehat and Guernsey, and about twenty-seven nautical miles from the port of Portvieux. It will stand on the south side of the middle of the reef. The basement of the masonry on which it will be placed is on a level with high-water spring tides, and will be carried up 2.10 metres. The height to the summit of the lantern is 56.15 metres; its diameter at base is 11.10 metres, and 4 metres at the top beneath the lantern gallery. The focus of the light will be 53 metres above high water. The tower is peculiar and elegant in form; the peculiarity of its construction is that its powerful framework is independent of the outer iron coating, so that any portion of its plating may be removed or changed without in any way affecting its strength, enabling, moreover, easy inspection of its plates. It also has the advantage, during erection, of dispensing with all scaffolding, and combines great strength with lightness and economy, the complete building (including the cost of erection, &c.) costing only £10,000. The tower contains, beside coal-bunker and oil-tanks, a kitchen and three keeper's-rooms, and a room for the inspecting engineer. It is surmounted by a first-order revolving light, giving a bright flash every four seconds, the eclipses being nearly double the duration of the flash, which is prolonged by a peculiar arrangement of the upper and lower prisms. The apparatus consists of a polyzonal cylinder of twenty-four sides; the dioptric lens and the two catadioptrics of each face have their axes in the same vertical plane; they have a horizontal divergence of 6 deg., and their maximum intensity is reckoned at 2475 flames. The revolving machinery produces an entire revolution in 1 min. 36 sec. M. Léonce Renault, Chief Engineer of the Ponts and Chaussées, and Mr. E. Allard are the engineers, and M. Rigolet the constructor.

The following lenses are shown in the building, viz.:—

1. A first-order fixed lens, varied with sixty-second flashes from a second-order polyzonal lens, the whole revolving; the sections of the frame and lens of the fixed light being projected in advance of the revolving light in proportion as the diameter of a first-order frame is greater than that of a second order. The idea is to equalise the light from the revolving and fixed lenses by increasing the fixed as a first order and diminishing that of the revolving one as a second order.

2. A lens of alternate flashes and eclipses at intervals of sixty seconds. It is 0·70 in. in diameter, a size between the third and fourth order. It consists of eight polyzontal lenses, with twelve prisms above and four below. The central zone, or polyzone, has six rings; the light is focussed in this lens by means of a long spiral screw from the base of the pedestal to admit of it being used for an electric light. Two of the eight sections open for trimming, &c.

3. A section of a third-order light fixed, with shutters outside the lens working from right to left simultaneously by clockwork machinery, creating eclipses in the direction of danger. The machinery and arrangement appear very simple. This apparatus is fitted with revolving machinery.

4. A first-order revolving holophotal lens, of twenty-four sections to the circle, similar to the one already described for the Roches Douvres. The glass, both in colour and finish, is very good. The supports or framework of the lower portion are of brass, which makes it costly without increasing its strength. Intended for America. Made by Barbier and Co.

The second lenticular electric apparatus exhibited produces different periods of light. Both are revolving. The first prolongs the flash, and thereby reduces the period of the eclipse, the lenses being placed so as to give a greater divergence than is generally the case, and to avoid as much as possible all vertical divergence, to effect which recourse has been had to the system of double lenses—such as are seen in the Calais and some other French lighthouses. Each of these lenses consists, in the first place, of a sixth-order fixed light very well made, with the prisms as small as possible to avoid thickness of the glass.

Around the lower fixed lens a six-sided apparatus revolves, each face consisting of a central section of a cylinder, about 30 deg. wide, and the full depth or height of the fixed apparatus. On each side of this central piece are fixed, parallel with it, three refracting prisms, each of the three comprising about 15 deg., thus making each entire face about 60 deg. By focusing each panel about ¼ in. beyond the light a greater degree of divergence is given than would be due to the size of the light—this divergence is about 6 deg., consequently each flash should be ten times as bright as a fixed light of the same power as the one employed. The outer apparatus revolves in seventy-two seconds, giving a flash every twelve seconds, and the light interval is to the dark as 1 to 10.

The upper lens has around it a revolving apparatus, consisting of eighteen very thin sections of a cylinder of 20 deg. wide, each without any prisms. The side next the light in these, as well as those in the lower lens, are plane surfaces—the outer only is curved. The focus of these, as of the others, is behind the light, for the purpose of giving extra divergence. In these the divergence is 5 deg., with a flash four times as strong as the fixed light; and the proportion of time between the duration of the flash and the darkness is as 1 to 3. The revolving part of this upper lens turns with the same velocity as the lower, which gives a flash every four seconds.

Drawings of the various lenticular apparatus are exhibited in the lighthouse.

The intensity of the flashes is considered to be as follows, viz.:—

	Flames.
The flash light	from minimum 13,500 to 20,000 maximum.
The fixed light	,, ,, 5,000 to 8,000 ,,
The fixed light, with flashes	,, ,, 49,000 to 73,000 ,,
The 30 sec. eclipse light ..	,, ,, 10,000 to 15,000 ,,

It is thought these intensities may be doubled by putting both steam-engines in motion.

A type of the harbour lighthouse adopted by France is shown on the banks of the Seine. Its height is 8 metres from the base to the platform gallery; diameter at base, 1.71 metres; and at the summit, 1.49 metres.

It is octagonal in form, of T-shaped iron mountings, bent to the desired angle and covering the joints. Its cost is £360. The illuminating apparatus is composed of six annular lenses, partly dioptric and partly catadioptric, producing a flash every twenty seconds. Colza, petroleum, or schist oil may be used in these lenses. The flashes alternate red and white. M. L. Renauld and R. Allard, engineers; and M. Rigolet, builder.

Among the models of this department are the following:—

3. The lighthouse of Triagos is represented by a model in relief. It is a third-order light, situated on a rocky island to the east of the Sept Isles, in the Channel. It consists of a square tower; on the basement is a vestibule with store-rooms and three keepers'-rooms, the roofs being vaulted; and it has an external gallery. The building was commenced in 1861 and completed in 1864, at a cost of about £12,000.

4. Phare de la Banche, began in 1861, finished in 1865, is situated to the south-east of the entrance to the Loire, about 9,500 metres from the land. The height of the building is 26.525 metres, and the focus of the light 21.225 metres above high-water spring tides. The cost of the work amounted to nearly £13,000. Built under the superintendence of M. Chatory and Messrs. Lalley and Britat.

5. This model represents a lighthouse erected, in 1865, in New Caledonia; it is of iron, and in nearly all respects analogous to that of the Roche Douvres, which renders a detailed description of it here needless. It was constructed under the same engineers as the former one.

The following are drawings of various lighthouses, either completed or in process of erection:—

Phare du Créach, established on a reef of rocks lying off the west point of the island of Ushant. The tower is 48 metres high, built of the stone of the island, pointed with Portland granite, and was completed in 1863, at a cost (lens inclusive) of upwards of £14,000. M. Matrot de Varennes is the chief engineer.

Phare de Conti, mid-distance from Arcachon to Biarritz, on a sand-hill surrounded by a sandy desert, rendering the construction of it a matter of great difficulty. It cost upwards of £7000.

A drawing claiming attention is that of the lighthouse of Cape Spartel, at the entrance of the Strait of Gibraltar, on the shores of Morocco, at a spot where the Brazilian frigate Dona Isabel perished with her crew in 1860.

Many other interesting drawings of lighthouses are exhibited.

As for the floating-lights, there is a model of lightship moored in the roadstead of Dunkerque, called the "Ruytingon" Light. It is built nearly on the lines of our English floating-lights, and has little deserving special notice. Its cost was about £5000.

With regard to the models of buoys exhibited by France, the first four numbers represent beacon buoys, the fifth a mooring buoy. They are made of iron plates on an iron frame, divided into water, tight compartments, so that, should a plate be damaged or become leaky, the buoy would heel over, but the airtight compartments prevent it sinking. These buoys, both in form and construction resemble those in use in England, the report on which will serve equally for either. This applies also to the bell buoys.

Model of a beacon on the Antioche Rocks, Isle of Oberon, consists of four iron cylinders carrying a square iron cage, surmounted by a pyramid, intended as a refuge from shipwreck. Cost about £800.

A tour balaisé for sea mark and saving life has a tide-gauge and beacon, also a bell, rung by the motion of the sea acting on floats. Erected April 20, 1865, in the Isle of Noirmontier; also in use off Rochelle. The bell and machinery by M. Foucault Gallois, of the Isle of Ré; built by M. Forestiér.

ENGLAND.

In class 66 of the English section of the Paris Exhibition, in the very limited space afforded for exemplifying the lighthouse illumination of Great Britain, the Trinity House authorities contrast some beautiful modern lenses with a ponderous old bull's-eye lens, made by Cookson, of Newcastle, which, in spite of the green colour of the glass and workmanship, which looks very coarse when compared with the high finish and sparkling appearance of those of the present day, still it did good service for many years, having in its turn succeeded the patched old metal reflector that had taken the place of the beacon fire about a century.

With whom the first idea of the built lenses, on which those of the present day are merely improvements, originated is, and probably ever will be, a disputed point. Sir David Brewster and Condorcet both lay claim to priority of invention; but there is little doubt that M. Fresnel was the first to produce a lens built of separate pieces of glass, at the suggestion of Condorcet, and this system of illumination is known as "Fresnel's system."

For many years the superiority of French glass left England entirely dependent on that country till Mr. James Chance, of Birmingham, took the matter in hand; and the Trinity House exhibition in Paris proves the success that has crowned the labours of this talented and indefatigable gentleman, both in respect of glass, workmanship, and optical science.

The following is a list of the various lenses, &c., exhibited by England:—

1. A first-order fixed light for 360 deg. of the horizon, consisting of eight panels of lower prisms, eight prisms in each panel; eight inclined panels of lenses, each panel having a central belt and eight rings above and below it; eight panels of upper prisms, eighteen prisms in each panel. The twenty-four panels are connected together by a gun-metal armature, and mounted on a cast-iron lens curb, which is supported on ornamental cantilevers secured to the lantern block ring. By Chance Brothers, of Birmingham.

2. An eight-sided revolving light of the first order, with gun-metal armature, mounted with its rotatory carriage on a square pedestal, with glazed doors containing the clockwork. An improved pressure-lamp is placed inside this apparatus.

3. (In the Park.) A third-order fixed light, to illuminate 288 deg. of the horizon, and on the land side an arc of 72 deg., having Mr. Thomas Stephenson's dioptric mirror with the improvements of Mr. James Chance. This apparatus is arranged for the electric light, and has ten upper prisms, and inclined lenticular panels, consisting of a central belt, with six rings above and below. The dioptric mirror is made in halves, so as to allow of its being opened to afford access to the electric lamp and for cleaning. The standards of the upper and lower frames are made to alternate with each other. The whole of the apparatus is mounted on an ornamental cast-iron circular pedestal. This light is erected inside a temporary lantern with its framing coinciding with that of the apparatus. The joints of the lenticular zones are inclined in the directions of the corresponding refracted rays from the focus.

4. (In the Building.) A small third-order fixed light, designed by Mr. Thomas Stephenson, to condense its light into 45 deg. This apparatus consists of 180 deg. fixed light, the 45 deg. in the centre giving direct light, and the 67½ deg. on each side being condensed over the central 45 deg. by means of a dioptric reflector, the same as that already referred; to whilst a fourth-order semi-holophote condenses the rays passing above the mirror, and throws them on a set of rectangular reflecting prisms, so curved as to transmit the light falling on them over the arc of 45 deg. required to be illuminated. In use in the Tay.

5. A first-order dioptric mirror for 180 deg. The light, radiating from any point in the vertical axis, is returned upon a corresponding point in the same horizontal plane by two internal reflections. The idea was originated by Mr. Thomas Stephenson in 1850, but was first carried into effect by Mr. James Chance in 1862. Intended for Ushinish.

6. A fixed floating light, composed of eight small beehives, of 180 deg. each, of the eighth order. Each apparatus is fitted with a reflector and lamp, the whole being mounted in a small lantern. By Messrs. Milne, of Edinburgh.

7. A sixth-order holophote, with dioptric mirror of flint glass, having the successive rings abutting together. This mirror is constructed on the principle of Mr. Thomas Stephenson (already referred to), and was the first one ever constructed, the work having been successfully carried out by Mr. James Chance.

8. A sixth-order holophote, with metallic reflector.

9. A 21-inch parabolic reflector, with a small holophote in front, 10½ inches diameter of periphery. A portion of the above reflector at its back is replaced by a spherical metallic mirror, of the same opening as the diameter of the holophote; the whole is fitted on a stand with a lamp.

10. A sixth-order fixed light, with a segment of holophote attached, throwing its light on a set of vertical prisms, intensifying a particular arc.

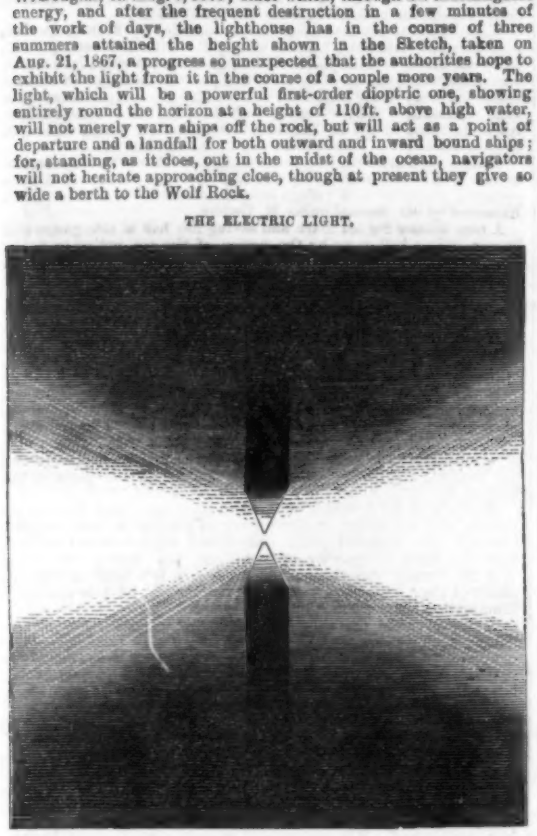
A first-class mechanical pump lamp, by Milne and Co., of Edinburgh.

The lantern exhibited by the Trinity House is a first-order one, designed by their engineer, Mr. J. Douglas, and is engraved, on page 545. It is intended for the Wolf Rock Lighthouse, a view of which is engraved on page 555. The chief difference between this lantern and all former ones is that the glass of it, being cylindrically curved, affords the greatest degree of optical accuracy, and the helical steel framing offers the least possible obstruction to the light.

The Wolf Rock lies midway between the Scilly Islands and the Lizard, about twenty-two miles and a half from either, and almost in the fair way of ships bound from the Channel either to the west coast of England, to Ireland, or Scotland. It is submerged at high tide, and, owing to there being deep water all round it, the lead gives no warning of its proximity. From time immemorial, therefore, it has been a terror to navigators bound to any of the above-named destinations, and still more so to inward-bound ships, which in the dark and stormy winter months have not been able to correct their reckoning by observation of sun or stars. In the earlier days of engineering science the impracticability of placing a lighthouse on it, owing to its exposed position, its great distance from land, and,

above all, to the heavy sea which at all times breaks over it, appeared to be insurmountable. In 1840, however, the lighthouse authorities determined to try and place a beacon on it, which, after various failures, was accomplished at an outlay of £10,000 and after seven years of danger and disappointment to the builders. This beacon, however, could only be seen by day, and the terrors of the Wolf during dark and stormy nights remained undiminished. When the eminent engineers, Messrs. Walker and Burgess, had succeeded, n 1858, in crowning the Bishop Rocks, which lie to the S.W. of the Scilly Islands, and on which Sir Cloudesly Shovel and his fleet suffered shipwreck in 1707, with a lighthouse, the greatest triumph of engineering skill extant, the Trinity House authorities applied for the Government sanction to erect a lighthouse on the "Wolf," which was unhesitatingly granted, and the first stone of the building shown in the Illustration was laid by their engineer, Mr. W. Douglas, on Aug. 6, 1864; since which, through his indefatigable energy, and after the frequent destruction in a few minutes of the work of days, the lighthouse has in the course of three summers attained the height shown in the Sketch, taken on Aug. 21, 1867, a progress so unexpected that the authorities hope to exhibit the light from it in the course of a couple more years. The light, which will be a powerful first-order dioptric one, showing entirely round the horizon at a height of 110 ft. above high water, will not merely warn ships off the rock, but will act as a point of departure and a landfall for both outward and inward bound ships; for, standing, as it does, out in the midst of the ocean, navigators will not hesitate approaching close, though at present they give so wide a berth to the Wolf Rock.

THE ELECTRIC LIGHT.



Before entering on this subject it may not be irrelevant here to call attention to an axiom in the theory of light produced by chemical action—viz., that its production depends on two conditions: first, that there must be solid particles in a condition capable of taking up the velocity; and, secondly, chemical action to impart the velocity to them. For instance, in the lime light we have the combination of hydrogen and oxygen which produces of itself but very little useful light, as it is purple; but when the combined flames are made to play on a piece of lime, the heat produced by the combining gases sublimes the lime, and then the particles or atoms floating in the flame produce an intense white light.

In the oil-lamp the hydrogen of the oil unites first with the oxygen of the air, and during this combination the particles of liberated carbon are floating in the combining gases as the particles of the lime were in the former instance; but, as the combination in this case is not nearly so violent, or rather as the velocity of the combining hydrogen and oxygen is not so great, the light produced is less intense. As, therefore, electricity exceeds all other means of giving velocity to such particles, so must the light it gives be of greater intensity than all other known lights.

As this light is now in use on both sides of the Channel, it may be well, before describing those in operation at the Great Paris Exhibition, to remind our readers of its origin. In 1831 that great and modest man Faraday announced to the world his grand discovery—viz., that whenever the magnetic force in a soft piece of iron or steel is being increased or diminished a current of electricity will be induced in a coil of insulated wire wound round such piece of soft iron or steel; to this discovery was soon added the knowledge that the force of the electric current thus produced is proportional to the magnitude of the increase or diminution divided by the time in which the change takes place; and, further, that the current thus produced is modified by the length and size of the wires employed being changed from a current that will melt a large iron wire on passing through it, but which at the same time will pass through the human frame unfelt, to a current that will not warm a small wire, but which will or can cause instant death to any living creature. The object, therefore, of the arrangement of all the parts is, first, to arrive at a maximum of electricity from a given weight of magnets, and, secondly, to modify the current in the coils, so that the shock shall be trifling, but the intensity great enough to produce a permanent light.

The application of the immortal Faraday's discovery to the purposes of coast illumination is solely due to the scientific attainments and great mechanical skill of Professor Holmes, whose indefatigable perseverance for more than a quarter of a century resulted in the magnificent light which was first shown from the South Foreland in August, 1858, was permanently placed at Dungeness, and has since been brought into use at Cape La Héve, to light the entrance to the River Seine, and will, moreover, shortly be shown from a lighthouse in the course of erection on the coast of Yorkshire. The great Paris Exhibition has afforded world-wide opportunities of witnessing its splendid effect.

In the electric light first experimentally used by the lighthouse authorities at the South Foreland and finally placed at Dungeness, the arrangement is as follows—viz., there are three concentric rings of magnets, and between the poles of those forming the first and second rings, and also those forming the second and third rings, the rims of two brass wheels revolve. The rims of these wheels are hollow, and contain the "helices" or "bobbins;" but the soft-iron cores round which the wire of the bobbins is wound are screwed into the sides of the hollow rims, and are turned off flush on the outside. The wires of all the helices or bobbins are connected together in series in the rim of each wheel, and the terminal wires are carried down behind the panel to four screws, two of which screws receive the wires for each wheel. These wires are carried through the hollow axle of the wheel to the outside of the bearing, and are there joined to their respective commutators. The commutators are contrivances by which the alternating currents of electricity induced in the helices are directed, and thus the entire current passes from the machine in one direction, instead of alternating, and forms a constant current.

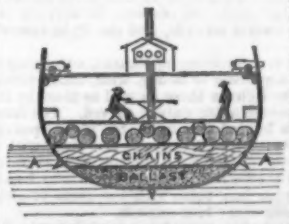
The magneto-electric machine in the English portion of the Exhibition in Paris differs from that at Dungeness simply in this—that each machine consists of six brass wheels, every wheel having sixteen helices of insulated copper wire. Inside each helix is placed a hollow core of soft iron; the wheels are all firmly fixed on a shaft, which is driven by an Allen steam-engine. The horseshoe magnets are placed in rings of eight in each ring, with their sixteen poles in the same plane pointing inwards towards the axle, and so adjusted that the distance from centre to centre of the poles is exactly equal to the distance from centre to centre of the cores of the helices. The magnets are so arranged that, whether counting the poles around one ring, or counting longitudinally through the seven rings, the poles are alternately north and south poles. In each machine there are ninety-six helices and fifty-six magnets. The intensity of current depends on the length of the wire throughout the connected series of helices; the quantity of electricity depends on the quantity of magnetism induced in the soft-iron cores, and on the velocity with which this quantity is taken up at each reversal of the poles. Experience of this engine shows us that 6400 changes of polarity per minute give the best result for light. No wood is employed in the English machine. The electric current is conducted through the wires to the lantern, where it passes alternately through the carbons, and at the points of these, when nearly in contact, the effect described at the opening of this subject occurs (see Engraving), and the most brilliant light known is the result.

The English and French electro-machines now in operation at the Paris Exhibition, though differing in construction, are the same in principle; so is the motive power, only that the French use the driving strap, whereas our electric-engine is worked by the direct action of the steam-engine; experience alone can prove which will turn out the most efficent. The English light is shown in a fixed lens, because the position it is intended to occupy on the east coast of England is that of a fixed light; and, however glad the lighthouse authorities would have been to test the great increase of power a revolving lens would have imparted to it, they had no such lens ready to experiment with. The result obtained in the fixed lens has proved a great success. Viewed from the hills surrounding Paris, the long-wished-for opportunity of testing the effect of the electro-magnetic light against the ordinary dioptric system is afforded by the beautiful revolving first order dioptric light intended for the Roches Douvres and shown from the fine iron lighthouse built for those rocks and placed in the French section of the park. This induced the English authorities to put up a rough scaffolding, on which, at a height of 145 ft., and nearly on a level with the French dioptric revolver, their electric light is exhibited. Had the French electric one been at a similar elevation, there can be no doubt that the powerful concentration into one beam of those rays which in a fixed light are scattered round the horizon would have been made amply manifest; nothing, however, could be more beautiful or dazzling than the effect of the French electric light already described, shown as it is at an elevation of only a few feet from the ground, through alternating coloured lenses. I may take this opportunity, in the name of my colleagues and myself, of offering our tribute of thanks to M. Léonce Reynaud, Inspecteur Général des Ponts et Chaussées, for his kind courtesy in affording information on every subject connected with his department of this beautiful exhibition. Whatever rivalry there is here is an international and honourable rivalry of science and art, and one that can only result in the good of our fellow-creatures.

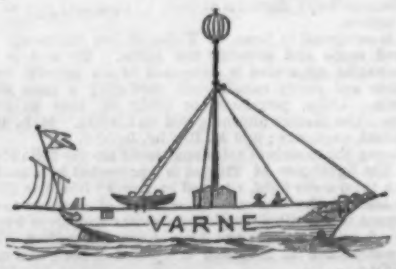
The French electric light, or rather two lights, exhibited from the windows of a small building in the park, differs from the Dungeness one in that, whilst the latter consists of three rings of magnets, with their poles outwards, radiating from the centre, each ring consisting of twenty magnets or forty poles, the French machine has seven rings of eight magnets each, or sixteen poles (i.e., 112 in all), the poles of the magnets turning inwards; between these turn six wheels, each containing in its periphery sixteen helices. The maximum intensity of light is attained by a speed of from 350 to 400 rotations per minute, whereby the electric current is inverted about 100 times in a second. Another difference between the French machine and the Dungeness one is due to an improvement of M. van Maldern, and consists in doing away altogether with the commutators. The magnets in the French machine are of a power of about 60 kilog. each. There are two engines and two electric lamps; the second engine is used in hazy weather to augment the intensity of the light, or in case of accident to the other engine. This light, like our own, is furnished with magneto-electric clockwork, which regulates the movements of the carbons; these, however, require constant watching. Although the electric current passes alternately through each of the carbon pencils, it is found that the lower one burns away more rapidly than the upper one in a ratio of about 108 to 100, necessitating a very delicate and intricate arrangement of the clockwork and frequent manipulation.

LIGHT-SHIPS.

The objects chiefly aimed at in the construction of these vessels are as follow—namely, that of ensuring as far as possible their permanence of position, especially in stormy weather. The form, therefore, that offers the least resistance to the sea, and thereby the least motion to the vessel, is the one most likely to ensure permanence of position. The best proof that this has been attained is the fact that, of the fifty light-ships that guard the coast of the United Kingdom, there is no record of accident accruing to any ship owing to the absence of a light-ship from her station. The form of hull that ensures easiest riding also affords the best exhibition of the light she carries, and, moreover, tends to reduce the cost of repair, inasmuch as she will strain less than one where the motion is quicker. To ease the rolling as as much as possible, rolling-chocks are bolted along the bilge of these vessels, as shown in the transverse section A, A. By far the larger portion of these light-ships belong to the Trinity Board. These are all painted red, as in case of accident any one may at a moment's notice have to be substituted for another.



As distinction of character is only second in importance to permanence of position, these vessels are furnished with from one to three masts, each surmounted by a globe 18 ft. in circumference. So, should a one-masted light-ship have to be suddenly relieved by a three-masted one, the fore and mizen masts are instantly hoisted out; the name, which is that of the shoal she guards, and is painted along two thirds of her side, is changed, and by the time a tug is ready to take her to the required station she is in a condition to proceed there. The accompanying Illustration will explain the manner of mooring these vessels so as to ensure ease in riding, the cable passing from the mooring-bitts out at a hawsehole near the water-line.



The lantern has a strong gun-metal frame, glazed with the best plate glass, the argand lamps in which vary according to the character of the light exhibited. The reflectors are silvered, and, with their oil cisterns, are hung upon gimbles, so as to keep the focus of the flame (no matter what the motion of the vessel is) always in the plane of the horizon. The lantern is kept in a deck-house during the day, where the keepers trim the lamps and polish the reflectors, and at sunset it is hoisted by a powerful winch into its place on the mast.

A warning-gong, suspended in the fore part of each vessel, is beat during fogs, and each vessel is furnished with two guns to warn ships running into danger, or to be fired as signals of distress at night, in case of a ship getting on the shoal, when rockets are fired in the direction of the stranded ship to point her position out to whatever succour may be sent from the shore. These vessels are furnished with a strong jib and mizen, either for ease in canting to the tide or in case of breaking adrift. The average cost of a light-ship fully equipped (exclusive of stores) is £3600, and the average cost of maintenance about £1100 per annum.

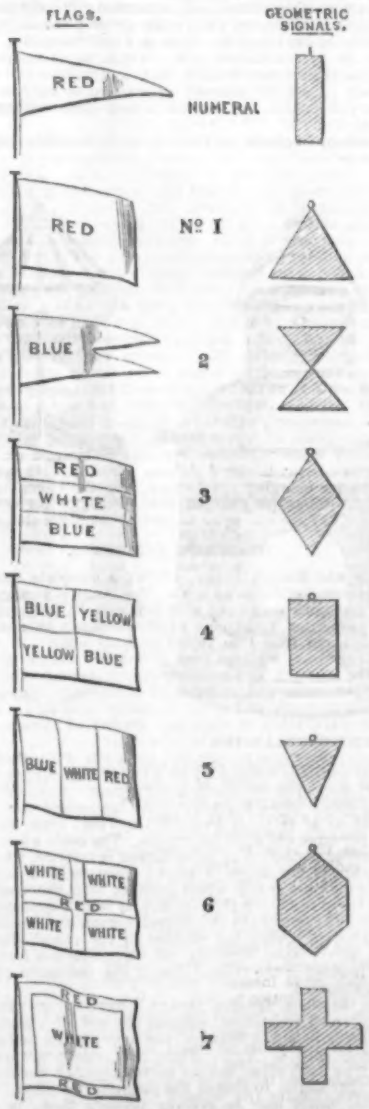
France has three light-ships. They are in all respects nearly identical with ours. Two of them are in the roadstead of Dunkerque, both showing red lights, one fixed, the other revolving every thirty seconds. These were first lighted on Nov. 15, 1863. The third light-ship guards a dangerous reef in the Bay of Biscay, in as exposed a position as any of our English vessels. Our method of mooring with heavy iron mushrooms is also in use in France, and their internal arrangements for the accommodation of the crew or the reception of shipwrecked men, as also their oil and other store rooms, are identical with our own.

A model of the light-ship at the Goodwin Sands is exhibited, the planking being omitted on one side so as to show the internal fittings and arrangements. She is three-masted, and shows her lanterns hoisted up for night service. The organisation of the light-ship service round the coast of England is shown in another portion of this report.

The following models are shown in this department:—A model of "apparent light"—a beam of light projected on a beacon from a lighthouse on the shore is reflected and shows the position of the beacon; model of first-class iron beacon; model of electric induction spark for illuminating beacons at sea; model of a first-class holophote revolving, the light which passes above and below the prisms collected into eight horizontal beams; model of a dioptric holophote fixed; model of a dioptric mirror, rendered holophotal; a 12-in. light-ship reflector; and a catadioptric holophote, with spherical mirror.

The following are models of the lighthouses exhibited:—Bell Rock Lighthouse, Kerryvore, Hamois, Skerries (Holyhead), Bishop's Rock, Reculvers, Menai, South Bishop's Rock, Eddystone, Needles, Wolf Rock (in course of erection), Cocket (and dwellings), Smalls (old pile lighthouse), Maplin (iron ditto), and Gunfleet (iron ditto).

The geometric signals are also shown in this department. Each light-ship and every rock lighthouse is furnished with a set. These signals can be used when the distance is too great to make out the colours of flags or where there is not wind enough to blow them out. The following diagram shows the form of these signals and the flags they represent; they have been five years in use, and are found efficient:—



Photometer by Captain Nisbet (Trinity House). This instrument has two electro-plated metal tubes, 10 in. by 2½ in. The tubes are placed over each other, with a sight tube between for observing. The lower tube is glazed at the end, and inside it is a small telescope working like a piston in a stuffing-box, with rack and pinion; a communication between the tubes allows a neutral tinted fluid with which the upper one is charged to flow into the vacuum till its density is sufficient to eclipse the light of a candle: the fluid can be made to represent any condition of the atmosphere from "clear" to "dense fog." A graduated scale on the side of the instrument shows the different degrees of density through which lights can be seen, and by this the comparative value of distant lights are calculated.

SIGNAL LAMPS.

Patent fog-signal, by Lieutenant G. Key, R.N., of 179, St. George's-street, London, has numerous advantages over the old horn, the principles of which are that it is blown by a pair of bellows, and may be used by a boy; and that the reed of the horn is protected, and therefore lasts longer; in addition to which it gives a louder and more prolonged blast.

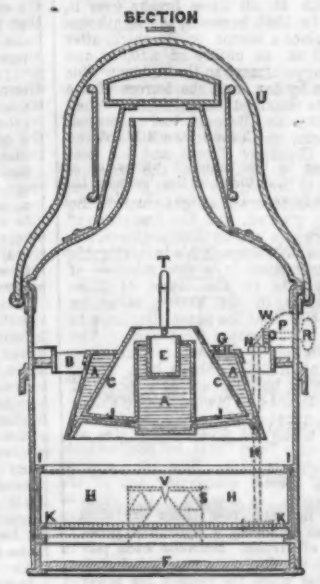
A fog-horn, exhibited by France, in the park, consists of an air-pump worked by a steam-engine. The horn, 2 metres in length, terminates by a right-angled curb, furnished with a metallic vibrating whistle. A horn of this description has been some time successfully used at Dungeness.

Nunn's side lamps, now in general use, appear only second to those lately adopted by the Trinity House with dioptric lenses made by Wilkins and Sons, of Long Acre.

The accompanying diagrams explain the character of thes e lamps. Nos. 1, 2, and 3 are bow, masthead, and anchor lamps; the other is Nunn's patent convertible signal-lamp, combining port, starboard, masthead, and anchor lights in one.

NUNN'S SIDE LIGHTS.

COURSE-INDICATING BINNACLE LAMP.

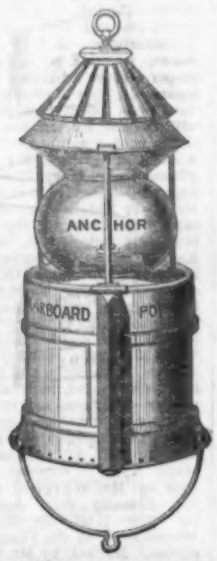


NUNN'S MASTHEAD LIGHT.

Nunn and Browne's course-indicating binnacle lamp and index is placed in the top of the binnacle, its oil-chamber supported on a double swivel, or gimbling, which always keeps it in a perpendicular position; therefore no overflow of oil can occur, let the ship roll or pitch as she may. The glass is in the bottom, and the reflector below the flame; consequently, neither can be sullied by smoke. The oil-chamber is cylindrical and elongated obliquely downwards, the centre being hollow and its circumference polished for reflecting, whereby the lighted wick, which is fixed within it at its upper level, casts its light effulgently on the compass-card below. The bearing of any object can be taken in the night-time with facility, as the shade of the binnacle can be removed at any time without interfering with the light on the compass-card, in consequence of it not being encumbered with the lamp.

The following diagrams fully illustrate the formation and use of these lamps:—

NUNN'S MASTHEAD LIGHT.



NUNN'S CONVERTIBLE LAMP.

F. N. Gisborne's pneumatic signals for ships enable the captain to communicate from the bridge of a steamer to the helmsman and engineer, to receive their replies, and to note the actual movements of both rudder and engine; thus, in case of danger from collision at sea, during intricate navigation, entering harbour, or in foggy and stormy weather, the vessel is under perfect and immediate control, and can be handled with confidence and safety. A small metal pipe, placed within a half-inch iron gaspipe and carried under the deck beams, connects the several instruments, the motive power being derived from the column of air within the inner pipe, while the outer pipe serves to convey a current of air for sounding the "attention" and "reply" whistles. By turning the handle of the captain's bridge-communicator, the pointers upon his and the helmsman's dials move instantly and in perfect unison, the same column of air giving motion to both. It is thus evident that change of temperature, or even a leak in the inner pipe (a very unlikely contingency), would not in the least affect the correctness of the signals transmitted; while any lost air would return through the place of escape the moment the pointers are at rest. So soon as an order is obeyed, the rudder-head telltale, which is self-acting, indicates upon the bridge-communicator the position of the helm to port or starboard before the alteration of the helm acts upon the ship's course, allowing ample time and opportunity to correct any possible error the helmsman may make. For engine-room signals, appropriate orders are painted upon the dial faces, and the telltale shows upon the captain's communicator every revolution of the engine "ahead" or "astern." The advantages of this system of signalling are manifold—the motive power costs nothing, being air; the pipes may be carried irrespective of angles; the internal structure is so simple that it can be repaired, if necessary, at sea; duplicate parts are inexpansive; and, should the piping be shot away, a small length of indiarubber tube slipped over the several ends instantly repairs all damage. Lastly, the whole apparatus is ornamental and inexpensive.

F. N. Gisborne's electric signals, now in use by the British Government on board the iron-clad fleet, attain by means of the electric current precisely the same control of the vessel as the pneumatic signals, a full description of which has just been given. They are simple and effective, and, the orders being painted on enamelled glass, are visible by night or day. A bell calls attention to the order, and a reply is transmitted by pressing a small knob or lever placed within easy reach of the helmsman or engineer.

Warning lights (10) of intense brilliancy, instantaneous action, and a power of sending their light twenty miles, are exhibited by Messrs. Colomb and Bolton. A description of the mode of using them is given with each box.

Colomb's system of flashing-signals are said to be very effective and intelligible in all weathers. Its simplicity is its great recommendation, a sort of barrel-organ measuring the length of the flashes and reducing the system to a mere mechanical arrangement. It has been fully described in Major Leahy's Report on Class 37, "Military Telegraphy and Signals."

The night-signal apparatus for sea service by the same inventor consists of a fitted lamp and signal-box, and a gibbet for suspending the lamp, fastened to the ship's side.

In the interior of the lamp (A) there is a semi-cylindrical shade, which falls by its own weight and completely obscures the light; when raised it completely exposes it, and thus produces flashes of longer or shorter duration. This shade is connected with a lever in the signal-box, which contains a barrel or cylinder, turned by means of the handle. The surface of the barrel is occupied by series of pins and bars, each series representing the numeral flashes. Parallel to the barrel is an iron bar, upon which the keys travel horizontally; and above the bar there is a flat brass plate, termed the director, on which four series of figures are engraved, and slots placed opposite each figure for the reception of the keys. The revolution of the barrel causes the pins on its surface to operate on the keys, which transmit their motion to a lever and to the lamp shade. It is therefore only necessary to place the keys in the slots corresponding to any required series of figures and then to turn the handle continuously to produce a revolving series of flashes, corresponding to the setting of the instrument, with unfailing accuracy.

BUOYS, ETC.

It should be observed that there is a uniform system of buoyage adopted by the Corporation of the Trinity House.

White buoys for many years were used by the Elder Brethren as a distinctive character; but as experience has proved that, under certain conditions of light, white is difficult to be seen, buoys of this colour alone have been entirely abandoned.

There has also been found a difficulty in distinguishing the colours black and red at all times. The Corporation have, therefore, now adopted the following system—viz., the side of the channel to be considered starboard or port with reference to the entrance to any port from seaward.

The entrances of channels or turning points shall be marked with spiral buoys, with staff and globe, triangle, &c.

Single-coloured can buoys, either black or red, will mark the starboard side; and buoys of the same colour, either chequered or vertically striped with white, will mark the port side. Further distinction will be given, when required, by the use of spiral buoys, with or without staff and globe or cage; globes being on the starboard hand and cages on the port.

Where a middle ground exists in a channel, each end of it will be marked by a buoy of the colour in use in that channel, but with annular bands of white, and with or without staff and diamond or triangle, as may be desirable, when required the outer buoy being marked by a diamond and the inner by a triangle.

When a middle ground divides a channel into two, and it is necessary that each should be buoyed, the right-hand channel will have red as the predominating colour, and the left-hand black; each side of the middle ground being marked by buoys proper to it as the side of a channel. The end buoys would be coloured in annular bands, as provided in the preceding paragraph, the outer red and white, the inner black and white.

When a middle ground is passed, and two channels thus buoyed merge into one again, the colour of the right-hand channel shall be continued as if no other existed.

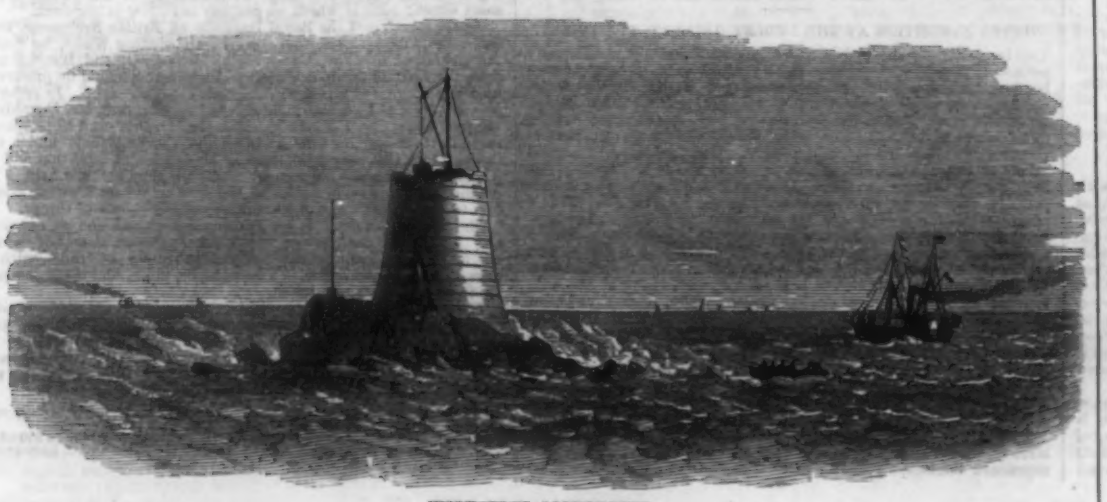
Wrecks will still continue to be marked with green nun buoys.

Should two channels in close proximity to each other require to be marked, the same buoys and same colours may be used, only inverting the buoy—i.e., mooring them in one channel from the apex or small end, and in the other from the base.

In the Trinity Board department of class 66, eleven models of different descriptions of buoys are exhibited, either in wood or iron. The total number in use belonging to this Board is about 400, and as these are brought into store, for painting and repairs, every six months (for in that period salt water and exposure destroy their distinctive character) it is necessary to have the same number of duplicate buoys to replace those brought in. This buoy-shifting, which takes place twice in the year, is one of the most arduous duties the Trinity steamers, as a rule, have to perform, seeing that these buoys for the most part mark dangerous shoals, and the change is effected at times, and frequently under circumstances, of considerable difficulty. Iron has of late years superseded wood in the manufacture of buoys, as being more durable and buoyant. The following diagrams of wooden buoys will explain their difference in form—viz., first, the wreck buoy, always painted green, with "Wreck" in white on the upper portion of it; next, the can buoy—these are black, with the name in large white letters on the flat exposed surface; then the "can" reversed—this was intended not merely as a distinction, but to render the buoy more visible, three iron legs being fixed to a strong hoop round the lower part of the buoy and the moorings attached to a ring where these meet, the buoy exposes a much larger surface above water than before. These buoys are much used, and painted in every variety of way to indicate the different shoals they mark—i.e., checked and ring stripes horizontal and vertical, &c.

The iron buoys are those most deserving notice in the small space afforded for the subject here. These vary in size from 9 ft. to 20 ft. The latter, which are termed "monster" buoys, guard dangerous shoals, where the traffic is great, such as the back of the Goodwin Sands, &c.; they are built of wrought-iron plates, riveted on a strong iron frame, the lower portion of which is divided into water-tight compartments. The "egg"-shaped or "water-ballast" buoys are those which retain their upright position best under all circumstances of high sea, wind and tide, &c. Their shape is shown in the diagram—the W indicating the water-ballast portion, which, though forming a part of the framing, is an excrescence on the base of the buoy, the plating of which separates the water-ballast-cup from the other portion. This iron cup is pierced with holes (H, H) to admit the water, which, when the buoy is hoisted up for shifting, is allowed to drain out and so lighten it.

Herbert's buoy is much the same in appearance afloat, but is the inverse of the "egg" buoy, the base of it being an inverted hollow cone (see Engraving, page 552). The idea is that the sea striking the inside of the cone, opposite to the outside struck by the same wave, would counteract the effect of the outer blow and keep the buoy in its position, and that the mooring-ring, being nearer the centre of gravity, would tend to lessen the motion of the buoy. Neither of these positions has resulted in practice; and, though the buoy is a conspicuous one, the hold offered to the wave by the hollow cone, in a monster buoy, brings a greater strain on the moorings than in the egg-shaped one.



WOLF ROCK LIGHTHOUSE.

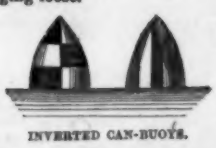
EGG-SHAPED BUOY.

BELL BUOY.

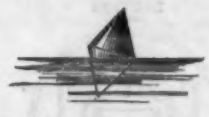
The bell buoy is the only one now to be noticed. Either of the above buoys cut down to where the ring-fender is shown, and decked over so as to be water-tight, and a light iron framing substituted for its original heavy one (thus preserving the form of buoy), constitutes the frame for a bell-buy. A bell being fixed in the centre of this frame with four clappers hung from the apex, and having a guide-rod to ensure their striking the bell, every movement it makes will cause one or other of the clappers to strike the bell, and thus a

GOODWIN MONSTER BUOYS.

continuous ringing is maintained, while the sea washes over the deck of the buoy beneath the bell. The bell is a fixture, the clappers hanging loose.



INVERTED CAN-BUOYS.



GREEN WRECK-BUOY.

The distinctive character given to the monster buoys is not merely in their colour, but also in the form, of the beacons that susmount them, which are as follows:—(1) globe; (2) diamond;

1. 2. 3. 4. 5.

(3) cage; (4) triangle; (5) triangle inverted. These are so constructed as to show their form from every point of the compass.

HYDRAULIC LIFT GRAVING DOCK.

Model of "Hydraulic Lift Graving Dock" (11), by Edwin Clark, 24, Great George-street, Westminster, London. This lift is a direct mechanical appliance for raising vessels completely out of the water by means of hydraulic presses. It consists of two rows of cast-iron columns, 60 ft. apart; in each row there are sixteen columns, 20 ft. apart, each column inclosing a hydraulic press, of 10 in. diameter and 25 ft. length of stroke. Between each pair of columns, extending entirely across the dock, are suspended girders, lying at the bottom in 27 ft. water when the presses are lowered, but rising above the surface when the presses are raised, forming a large wrought-iron platform or gridiron, which may be raised or lowered at pleasure, with a vessel upon it. The lifting power of each press amounts to 200 tons, or 6400 tons for the whole lift. The girders are designed for carrying the vessel as a load at the centre, although the load is distributed by a pontoon placed beneath the ship, and the wide base used for the blocks. The raising of a vessel occupies about twenty-five minutes, and is effected as follows:—An open pontoon proportioned to the size of the vessel, with keel blocks and sliding bilge-blocks adapted to her shape, is placed on the girders and sunk with them to the bottom. The vessel is then brought between the columns and moored securely over the centre of the pontoon. By lifting the girders, the keel blocks are first brought to bear under the keel of the vessel; the side blocks are then hauled in, and the gridiron and pontoon, with the vessel upon it, is raised clear of the water. The pontoon by means of valves empties itself of water; the valves are then closed, the girders again lowered to the bottom, leaving the pontoon with the vessel upon it afloat.

Thus in about thirty minutes a vessel drawing 18 ft. of water is left afloat on a shallow pontoon drawing only 14 ft. 6 in., and may be taken into the shallow dock prepared for its reception.

The principal features of this system may be summed up as follows:—

1. Its economy, as well in its first construction as in its subsequent maintenance.
2. Its adaptability to almost any situation, especially in harbour or tideless seas.
3. The capability of almost indefinite extension, by the construction of additional pontoons, or, as regards the lift, by the addition of extra columns.
4. The simple and durable character of all its parts, and their perfect accessibility.
5. The short time required for its construction and erection.
6. The rapidity of its manipulation and the small staff required.
7. The convenient access afforded to all parts of the ship, and especially in painting iron ships; and their free exposure to light and air.
8. The freedom from strain with which vessels, even in cargo, may be docked.
9. The means afforded of rendering any area of shallow water available as a dock for the largest vessels.

LIFE-BOATS AND BOAT LOWERING APPARATUS.

Collapsing life-boats, invented by the Rev. L. Berthon, M.A., &c. These boats are constructed of a framework of wood arranged in a longitudinal direction, consisting of a number of flat segmental timbers hinged together at the tops of the stem and stern posts. These timbers, when opened out, extend two skins of an extremely strong, flexible material, one of which is attached to their outer edges and the other to the inner, thus not only completing the form of the boat but dividing the whole body into as many separate air spaces as there are intervals between the timbers. The edges of the timbers are furnished with bands of iron outside the skins to defend them at these salient points. The expansion of the boat by its own weight is kept up by the bottom boards, thwarts, and certain gunwale supports, all of which are jointed. The advantages of these boats are the following:—

1. Being collapsible, they stow in less than one fifth of their breadth.
2. Very large boats are capable of being stowed "outboard" against the bulwarks or nettings, ready to expand and lower at any moment.
3. They may be quite supplemental to the ordinary boats of a ship, not interfering with such arrangements, and can be lowered from the same davits.
4. They are insubmergible, and have proved themselves excellent sea-boats in all weathers. The largest yet made would carry nearly 300 persons.

The accompanying Engraving (Nos. 1 and 2) will explain their form and arrangement.

Wood and Rogers's patent boat lowering, suspending, and detaching apparatus is shown in the Trinity House department of class 66. The boat is suspended from four points at the sides and not, as usually, from two central points; this method prevents the possibility of its canting while hanging to the davits or during the time of lowering.

Clifford's Boat-lowering Apparatus.—This plan of boat lowering is now so thoroughly known and appreciated that upwards of 2000 have been fitted on Mr. Clifford's principle. The boat is lowered by one of the crew in the boat itself, who, from the perfect ease and safety with which the lowering gear detaches itself, can at any convenient instant drop the boat into the water perfectly free of all tackle and while the ship's way is unchecked. Many lives have been rescued by the rapidity with which succour has been thus dispatched to them.

STEERING APPARATUS.

Money Wigram and Sons' arrangement of steering, planned with a view to remove the steering compasses from the stern of a ship at which point the magnetic currents acts strongest on the compasses. The tiller is placed athwartships, and fitted with a travelling collar, having on its lower side a nut working in fore and aft guides on a horizontal fixed screw, the shaft of the screw being continued under the deck beams to below the steering wheel. An endless chain working on two pitched wheels, one on the wheel and one on the shaft, communicates motion to the screw. This chain may be carried either direct down from the wheel and over directing pullies, or, if it is required to gain speed or power, motion may be communicated by working the chain on increasing or diminishing geared wheels.

To obviate the wear caused to screw steering gear by the continued shaking of the rudder, the head of the main piece of the rudder is in two lengths; each length having one part of a clutch-box forged on or keyed to it. Each part of the clutch-box has four projecting segments, so arranged that when the clutch-box is placed in contact these segments come at the degrees of the circle, the space between the segments being filled in with blocks of indiarubber. The clutch-box is held together by bolts and nuts, which, though fast in the lower portion, do not fit tight in the upper, and admit of sufficient play for the indiarubber blocks to receive the blow caused by the sea, and thus prevent the constant wear and injury to the screw and nut.

Lumly's patent rudder is in shape and form the same as the old rudder, but is divided vertically into two pieces, the "body" and the "tail," which are hinged, jointed, or articulated together by pintles and braces; the result is, that in putting the helm over either way a self-acting increased movement is given to the "tail," giving increased effect to the power the ordinary rudder exerts on the ship. The Engraving on page 545 will explain the nature of this invention. It is said collisions have been avoided by the increased handiness thus given to the vessel.

GALLEYS AND COOKING APPARATUS.

Benham and Sons, of Wigmore-street, London, exhibit half a dozen models of various ships' cooking apparatus, which they have fitted in passenger-vessels for the Peninsular and Oriental and Royal Mail Steam-Packet Companies, and in the new Indian troop-ships and other ships of the Royal Navy. There are several varities of form and arrangement; but the leading features in all are the same, and in all the same advantages appear to have been secured, which are of special importance on board ship—viz., compact bulk, external coolness, simplicity of management, and economy of fuel.

The most novel arrangement is seen in their circular apparatus, of a pattern which is in use in the new West India Mail steamers, and which consists of two roasting-ovens, two pastry-ovens, two hot closets, a broiling-gridiron, a large hotplate, a steam and hot-water boiler, four steam-kettles, two bainmain pans, a rack shelf for saucepans, &c., two furnaces, &c., all within a diameter of 7 ft., yet capable of cooking for 300 or more saloon passengers, and baking all their bread and pastry. There are, of course, guard rails to steady the stewpans, and there is also a guttered edge to the hotplate, to prevent overflows from a sudden lurch of the ship. The oven doors are curved, and slide in grooves; there are catches to secure them in their places; there is a water-guage to show the level in the boiler, and all necessary arrangements of soot-doors and dampers for the cleansing of the flues and the complete control of the draught. The fuel consumption is said to be very moderate, and the radiation of heat surprisingly small. (An Illustration of this apparatus was engraved with the Report on Class 24.)

The next apparatus in importance and bulk is the troop fire-hearth for the Navy, pattern E. This is of oblong form, and has its furnaces at the front and back, the sides being protected by wood casings; so that all radiation is effectually prevented. It consists of three very large iron boilers for meat, soup, tea, cocoa, &c., capable of cooking for 1400 men, and with large draw-off cocks for filling the soup-pails; six long iron ovens, shaped like gas retorts, and two large side ovens; the eight being capable of baking 900 lb. of bread, or, by opening a valve, of roasting the meat rations for 800 men; also a large hotplate for boiling, stewing, frying, &c., with two large ovens under it for baking or roasting; these latter being appropriated to the use of the non-commissioned officers, the married men, and the invalids. The whole apparatus is put together in three sections, so that either of them may be disused for cleaning or repairs, without interfering with the full action of the others. The management is perfectly simple, and the fuel consumption very small for the work performed. The fire-hearth represented by the model is the size recently fitted in H.M.S. Himalaya and the five new troop-ships for the Indian service; but smaller ones have been in use for some time in H.M.S. Asia and Hector; and one previously in the Emerald, now out of commission, has been refitted in the Phœbe.

Of the remaining models two represent the officers' apparatus and the crew's apparatus, as fitted in the same ships; and a third the saloon apparatus fitted in several ships of the Peninsular and Oriental Company. All alike have ovens for baking and roasting, efficient boilers and roomy hotplates, and the latter has, in addition, steam-kettles for vegetables, fish, &c. All are very compact and handy, and in all the two essential points of coolness and economy of fuel have been well secured.

MISCELLANEOUS.

The following objects of interest are exhibited by England in class 66:—Model of floating dock for ships of 4800 tons, bought by France and sent to Saigon, in China, 300 ft. long, 94 ft. broad, and 27 ft. deep, by Randolph. Iron floating-dock for ships of 10,000 tons; dimensions, 432 ft. long, 110 ft. broad, and 53 ft. deep. One in operation at Bermuda. Patent fuel economiser for using the waste heat from steam-boiler, a saving of 25 per cent of fuel, by Edward Green and Son, Manchester. Lenses for light-ships, by Wilkins, London. Side-lights for ships used by the Trinity steamers, economical and of great power, having dioptric lenses in lieu of bull's-eyes, by Wilkins. Model of Sunderland harbour and docks, Thomas Meek, Esq., engineer, showing the harbours and basins of Sunderland, with their various entrances, &c. Life-raft built in 1850 (presented by Captain F. B. Williams), by Richardson. Life-raft forming a portion of the waist of a ship, and therefore taking up no room for carriage. It is detached instantaneously, leaving an open space for the crew to escape. The raft carries a sail and compartments for food and water, and is very simple and buoyant, by Hurst. Models of ships, by Laird Brothers, of Birkenhead, beautifully executed. Some fine models of ships by Samuda Brothers. Models of ships by Randolph, of Glasgow. Models of engines by Humphreys, of London.

A New Steering Compass (5) by John Lilly and Son, of London, entirely differs from others, as the needles only are placed in a vessel containing liquid which will not freeze at ordinary temperatures, and the indicating card is placed on the upper part of the compass bowl, thus avoiding any discolouration from the action of the spirit. It is fitted with a simple lifting apparatus, so that when not in use the needles and card can be raised from the point and thus very much preserved; and it is so constructed that it is perfectly steady in bad weather and exceedingly sensitive in smooth water.

A Screw Propellor for Shallow water, the flanges or blades having the action of a man's arms and hands in swimming. It is ingenious, and the experiments made with it give reason to believe that, if perfected, the invention may prove extremely valuable for the navigation of shallow rivers. Invented by Peter Nolan, of 51, Newman-street, Oxford-street.

FINE ARTS.

WINTER EXHIBITION AT THE DUDLEY GALLERY, PICCADILLY.

THE landscapes in this exhibition, like the figure-pictures already reviewed, possess considerable variety of interest, though comprehending little that is of the highest order of merit. On the whole, the men cultivating this field, and to whom we look for the landscape art of the future, present less promise than their brethren, the "rising men" of the figure department. The aims of our younger landscape-painters generally are of the humblest. The existence of a great school of historical landscape painting from Titian to Turner seems to be wholly unknown to them. At all events, consciously or unconsciously, they for the most part entirely ignore its principles. That a landscape may be a "picture" as well as a mere view without disloyalty to Nature (indeed, quite the contrary) appears to be seldom understood or, at least, acted upon. The more essentially mental attributes of style, feeling, and sentiment are rarely prominent. Even the subjects and effects represented are usually of the most familiar kind; too commonly the sketch, study, or topographical view takes the place of the landscape-picture properly speaking. On the other hand, many of the productions of our young landscape-painters are to be commended for evincing those estimable characteristics of the period of studentship—freshness, unaffectedness, and conscientious fidelity to nature; whilst hardly anything could be better adapted for keeping alive in townsfolk a healthy love of the country.

To Mr. H. Wallis's picture, "Across the Common," we have already invited attention, as containing some of the most admirably expressive landscape-painting in the room. Let us now select for primary mention other contributions presenting some originality or comparative novelty of treatment—some indication of poetic sympathy or aim at style. By Mr. Mawley, then, we have, under the title, "When Leaves Fall and Cold Winds Come" (177), an impressive picture of late October, dismal, evening effect on a rough and dreary road, bordered by almost leafless trees; a heavy, lowering sky overhead, with the sullen clouds scarce flushed into anger by a lurid gleam of sunset, and a woman pressing her babe to her breast as she hurries homeward through the bitter wind. Another picture of a barley-field, and cows coming to water at a shallow brook fringed with alders, is dexterous, but slight in execution; and neither the common-place materials nor the treatment seems to justify the rather pretentious title of "Pastoral." Mr. Oakes evinces a sense of pictorial requirements in "The Stream from Idwall" (74), by composing the broken, ragged clouds, torn by a glint of sun in the distance, to accord with the rugged ravine and boulder-encumbered bed of the swollen, peat-stained torrent. An artistic instinct is also discernible in "Flotsam and Jetsam" (48)—the legalised title for a representation of wreckage—thrown by tumbling waves on a rocky shore, black with seaweed, with a tenderly-rendered distant headland, and a few clumsy clouds, laggards of the recent storm. Mr. H. Dawson scarcely supports his reputation in "A Watering Place" (218): it is too obviously imitative of Constable; but there are more original observation and power in "A Wild Sunset" (246), representing the mouth of a port, with blood-red sunlight behind ominous and fantastic thunder-clouds. Two views on the Thames (2 and 152), by Mr. Holloway, suggest profitable study of Turner in their broken colour and hazy atmospheric effects. Still more felicitous in the expression of diffused mellow light softly pervading a faint mist and trembling on slightly-agitated water is Mr. Hemy's little picture of "The Entrance of the Tyne, Looking Seaward" (164), with children in a fishing-boat. "A Cottage Garden" (231), by the same artist, is, though meritorious, strange to say, a little hard for twilight. "Carrying Corn" (76), by Mr. A. Goodwin—a newly-reaped upland wheat-field, crested by trees and farmsteads—is remarkable for its well-remembered rendering of those peculiar phenomena of colour observable when the afterglow on the rich autumnal hues is fading into the greenish yellow light of the approaching harvest moon, only seen as yet, however, half smothered by fleecy clouds. It may be observed, *en passant*, that this and other artists chiefly known as contributors to the water-colour exhibitions at this gallery appear to equal advantage in oil. Mr. Dillon whose works, if sometimes rather slight, are always noticeable for harmony of colour, for a degree of style, and for appropriate feeling, is fairly represented by "The Castle of Ischia" (119) and a moonlight view of "Geezeh" (170). In Mr. Frank Walton's "Valle Crucis, Llangollen" (210) a recognition of the sentiment suitable to the ruins of the ancient church is evident in the sad, chill, after-sundown sky; yet, making due allowance for the intended effect, the colouring seems to us too simply blackish. Though a little conventional, the view of "The South Stack Lighthouse, Holyhead" (138), by Mr. G. L. Hall, conveys a striking impression of great waves accumulated by a south-west gale up the Irish Sea breaking on the rocky and precipitous headland. Sunsets by Mr. J. Danby, and a twilight view of lonely "Glenshee" (50), by Mr. W. H. Paton, have sweetness or solemnity of feeling.

Landscapes of literal aim—transcripts more or less faithful of nature—abound. In this class must be placed examples of Mr. Cooke (46 and 200) and Mr. Redgrave (84), with their familiar characteristics. A view of a valley on Dartmoor (34), by Mr. H. Moore, presents an apparent discordancy between the landscape proper and the brilliant sky, both of which are admirable, separately regarded. That after-sundown effect is intended is evident, because the clouds reflect light from their edges above and below, and this will account for the low tone of the former; but the hue of the clouds is of a rather too metallic silver for any conditions of sunset. A study of seashore (234), by the same artist, is remarkable for the glistening brilliancy of sea and sky. Very vivid in colouring (perhaps too much so as regards the purple clouds and nearer shadows) is Mr. C. P. Knight's expansive view of "The Merionethshire Mountains from Criccieth Bay" (83), with part of the mountain range brilliantly reflected on sand left wet by the receding tide. Mr. Knight also contributes a striking seapiece, "The Entrance to Falmouth Harbour" (137), specially noteworthy for its novelty of effect; the sun having just dipped below the horizon and left the great watery plain hurtling its myriad waves together in what looks like the very "blackness of darkness," contrasted with the sky and distant cliffs still glowing in the direct sunbeams. Mr. Mr. C. J. Lewis, another vivacious painter, but in a more broken manner, has a delightful bit of English champaign, (219) sparkling in the foreground, with saintfoin and wild flowers, and dotted away yonder with farms and trees and church steeple; here a film of village smoke, and there a gleam of river or brook, striped with hedgerows and chequered with fields, the whole, meanwhile, dappled with the changeful sun and shade of a sky all mottled with fleeces and azure. As a contrast to this may be named a truthful view by Mr. W. Field of "Sonning, Berks" (175), on a wet and dismally dull day; and the scarcely more cheerful view (118), by Mr. F. Talfourd, of an osier and alder fringed bank of the Thames near Henley, with swans paddling up stream. No. 181, by Mr. Smallfield, representing mists rising on a midsummer evening from a hollow, in thin level sheets, and veiling in ghostly grey some passers-by, seems to discover a faculty for landscape in the artist guaranteeing success at least equal to that achieved by him in figure-painting. "A Cottage, Lledr Valley" (33), and other Welsh views by Mr. Peel, have much delicacy and elegance of touch, though reminding one of that pretty but finical speckle of execution so dear to amateurs in the drawings of Birket Foster. Mr. Aston has a truthful and honest study of pines on a steep, fern-strewn acclivity of the Atholl Woods (98). By Mr. H. Johnson there is an effective sketch, "On the slopes of Snowdon" (320); by Mr. W. H. Hopkins a vivid study of a dizzy pathway down the precipitous coast near "Mentone" (118); and by Mr. Henry a Venetian view, tender in colour. The following are likewise commended to the visitor's notice:—A moonlight view of Battersea Bridge (56), by Mr. Ascroft; a study of breaking waves under a misty sky, at the Land's End (82), by Mr. J. Nash, jun.; a sunset view in the valley of the Dee, North Wales; "Kynance Cove" (54), by Mr. A. A. Hunt; and two or three waterfalls by Mr. Gill. On a pedestal in the room is a clever sketch in terra-cotta, by Mr. Lawson.

A winter exhibition of water-colour drawings is opened at the gallery of Mr. M'Lean, in the Haymarket; and another of oil paintings and water-colour drawings at the gallery of Mr. Tooth, in the same street; both of which we propose to review in our next.

At the meeting of the Royal Institute of British Architects, Professor Donaldson stated that, on recently visiting Wales, he found the castles of Conway, Carmarthen, Beaumaris, and Harlech in a state threatening entire destruction, though they could be preserved by a little judicious repair with materials on the spot. In order to prevent these and similar buildings falling into ruin, Mr. Donaldson suggested that Mr. Tite, the president, or Mr. Beresford Hope should move in the House for a return of all the buildings held under the Crown since the year 1600, stating their present condition and by whom and under what terms and conditions they are now held. To procure such a return would be the best means for drawing attention to and preventing the present discreditable state of things.

The Indian Government has appointed a commission to examine and report on the various historical buildings, some of which are 3000 years old, in the various provinces of India, with a view to their conservation. Photographs, plans, and measurements are to be systematically taken.

The Musée of Brussels has just purchased, for 125,000f., a celebrated picture by Teniers, representing a kermesse, or village fête, which belonged to a family of Antwerp, and is only rivalled by pictures in the Royal Collection, Windsor, at St. Petersburg, and Vienna. Teniers has introduced himself in the picture as the host, or seigneur, accompanied by his wife and two daughters.

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